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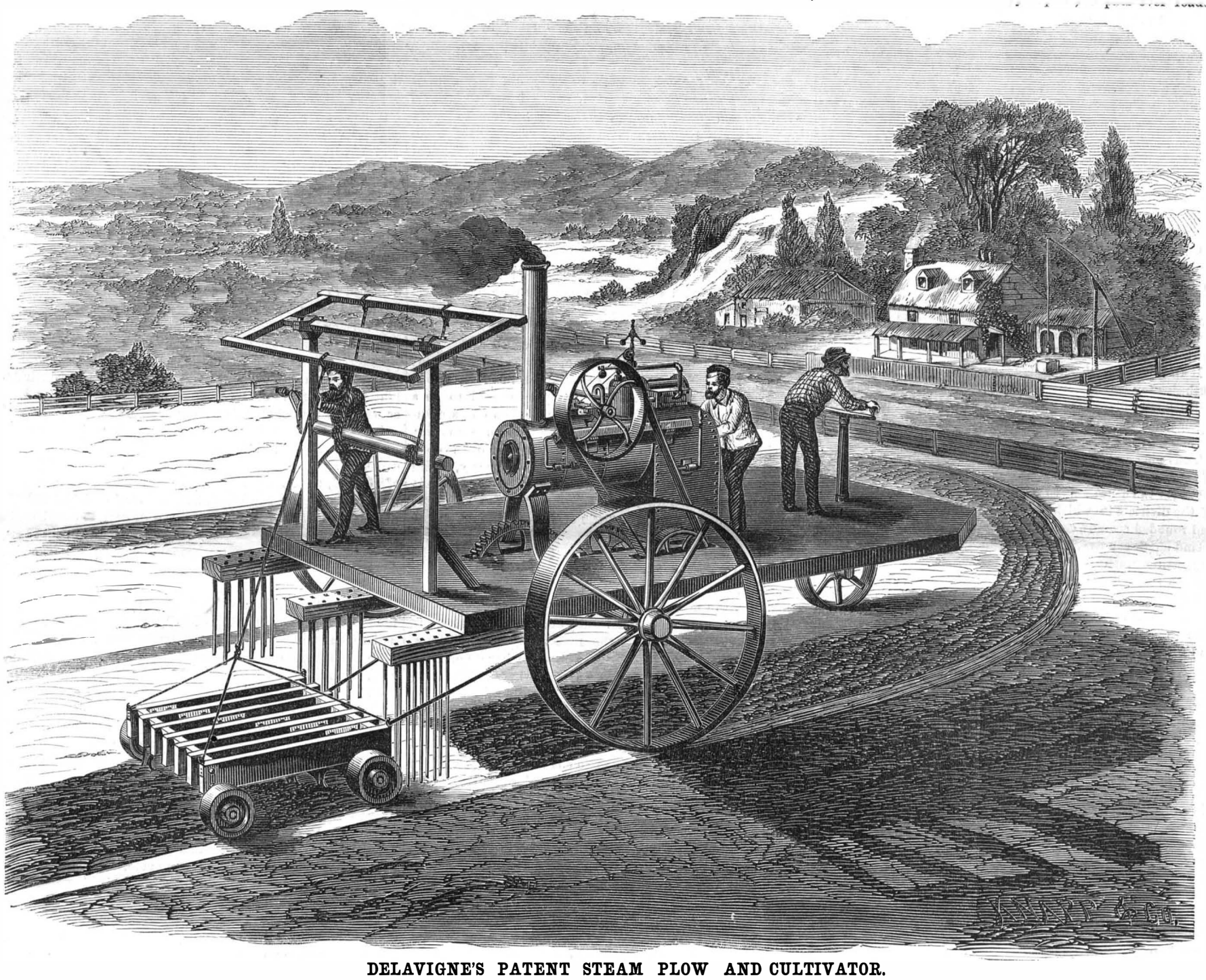
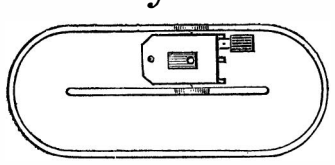
Improved Traction Engine and Steam Plow.

Many attempts have been made in England and in this country to adapt steam to the arduous labor of plowing, but none of them have as yet been so successful as to insure the general adoption of any one system, although, under favorable circumstances, some good results have been attained. The plan of employing stationary engines located on the borders of a field, and drawing, by ropes or chains, a plow or a gang of plows across from side to side, is cumbersome, costly, and not very satisfactory. The traction engine is unwieldy, and not adapted to loose soil or yielding surfaces. The peculiar feature of the machine shown in the accompanying engravings is, that it forms its own roadway, which it always travels in the successive operations of plowing, harrowing, and cultivating. The large engraving exhibits the machine in operation It



DELAVIGNE'S PATENT STEAM PLOW AND CULTIVATOR.

Fig. 2



is a platform 26 feet long by 15 or more wide, supported mainly on two wheels, 9 feet in diameter, with tires 15 inches wide. There is a steering wheel in front operated by a lever or hand wheel. The platform supports an ordinary portable engine and boiler, connected by suitable gearing to the propelling wheels. The gearing is so calculated, relatively to the number of revolutions of the engines, as to propel the machine forward at a rate of about 150 feet per minute, which rate may be increased or diminished by the change of a pinion. It is designed that the machine shall always travel on the same road or track in going forward and back over the field, so as always to have a firm road for the machine to travel upon, in the various operations of plowing, harrowing, seeding, cultivating, reaping, etc. For harrowing or cultivating, the whole space is taken in once passing, the cultivators being so arranged as to pass between the rows, the wheels being high enough for the machine to go over the crop until it is quite tall.

The main shaft, on which the driving wheels are fixed, is in three sections, the middle one turning in bearings near either end, and connected with two short sections which carry the wheels. The connections are made by sleeve couplings, either on square shafts or round shafts feathered. The object of this arrangement is to allow either wheel to be uncoupled in turning corners, so that the track of the inner wheel shall be a straight line, the wheel turning as a pivot, while the traveling wheel describes the curve. The plan is shown plainly in fig. 2. It will be seen, that after being plowed, the field lies in beds, 15 feet wide, with the path or track of 15 inches between each bed undisturbed.

The plows are seen in the gang, Fig. 3; the harrow, in Fig. 4; and the cultivator in Fig. 5. Either of these is attached to the machine by rods or chains, and can be elevated or depressed, as occasion may require, to pass over roads or uncultivated portions of the field, or to adapt them to work at any depth, according to the nature of the soil, by means of the hoisting appendage seen in Fig. 1, at the rear of the machine. A group of rods—Fig. 1—extend from the platform in advance of the plowshares for the protection of the growing plants, to prevent them from being injured by the deposition of the soil by the plows. It is evident, that in addition to the work of cultivation, this machine may also be used as a power to drive thrashing machines, saws, and to perform other labor required on the farm or plantation.

Fig. 3

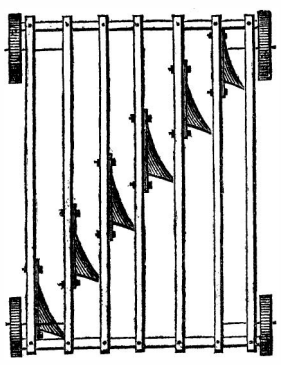


Fig. 4

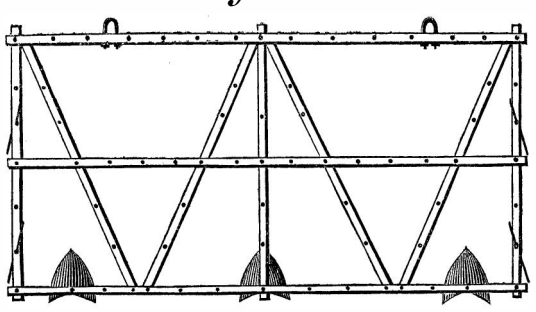
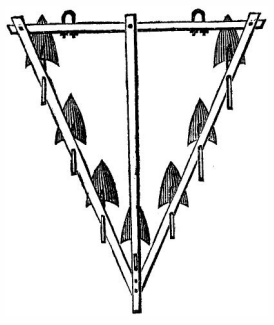


Fig. 5



Patented March 31, 1868, by John C. Delavigne, who may be addressed at New Orleans, La.; or application may be made to E. E. Tiffany & Co., 15 Wall st., New York city.

A BRILLIANT meteor was observed in London on the night of October 7. It lasted about five seconds. Everything was as clear as day, the cathedral and houses at the northwest corner of Cannon street standing out in bold relief against a brilliant sky. The lights in the gas lamps were for the time invisible.

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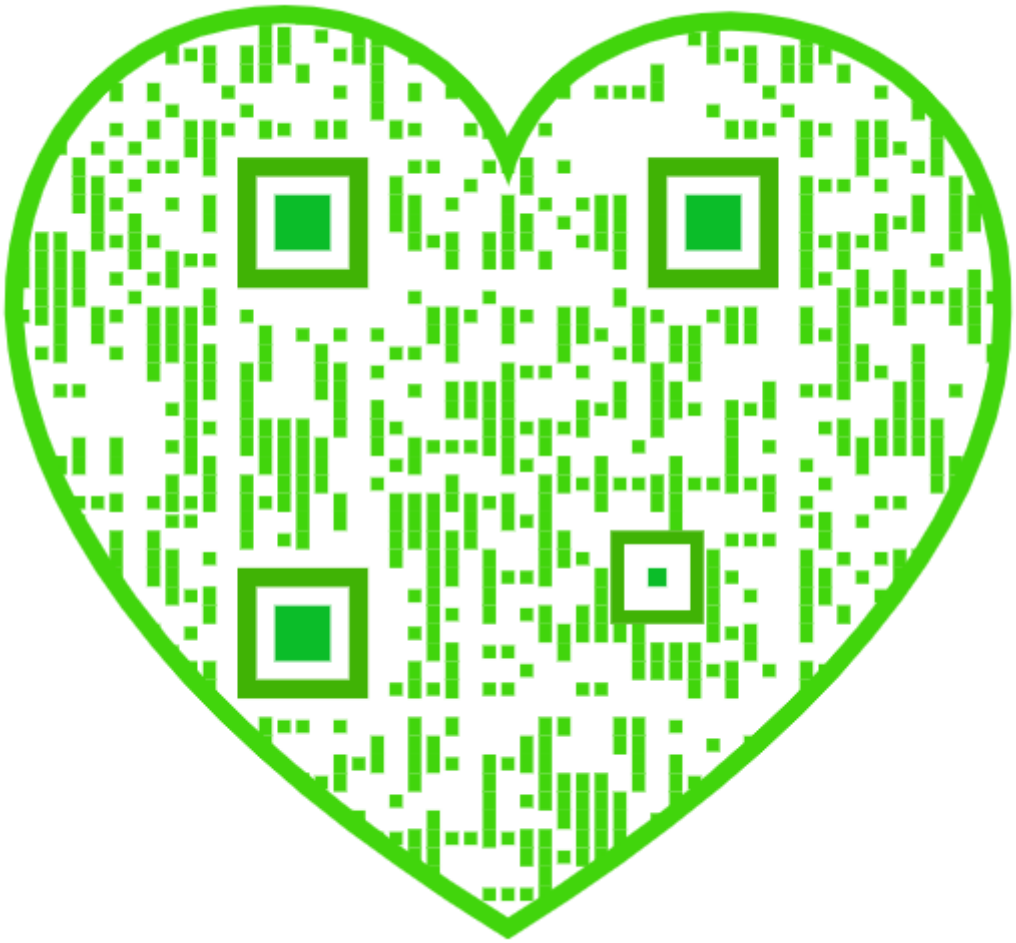

"ON A PIECE OF CHALK."—A LECTURE TO WORKINGMEN.

BY PROFESSOR HUXLEY, F. R. S., ETC.

If a well were to be sunk at our feet in the midst of the city of Norwich, the diggers would very soon find themselves at work in that white substance, almost too soft to be called rock, with which we are all familiar, as "chalk"

Not only here, but over the whole country of Norfolk, the well-sinker might carry his shaft down many hundred feet without coming to the end of the chalk; and, on the sea coast, where the waves have pared away the face of the land which breasts them, the scarped faces of the high cliffs are often wholly formed of the same material. Northward, the chalk may be followed as far as Yorkshire; on the south coast it appears abruptly in the picturesque western bays of Dorset, and breaks into the Needles of the Isle of Wight; while on the shores of Kent it supplies that long line of white cliffs to which England owes her name of Albion.

Were the thin soil which covers it all washed away, a curved band of white chalk, here broader and there narrower, might be followed diagonally across England from Lulworth in Dorset to Flamborough Head in Yorkshire, a distance of over 280 miles as the crow flies.

From this band to the North Sea on the east and the Channel on the south, the chalk is largely hidden by other deposits; but, except in the Weald of Kent and Sussex, it enters into the very foundation of all the south-eastern counties

Attaining, as it doe in some places, a thickness of more than a thousand feet, the English chalk must be admitted to be a mass of considerable magnitude. Nevertheless, it covers but an insignificant portion of the whole area occupied by the chalk formation of the globe, which has precisely the same general character as ours, and is found in detached patches, some less and others more extensive than the English.

Chalk occurs in northwest Ireland; it stretches over a large part of France,—the chalk which underlies Paris being, in fact, a continuation of that of the London basin; runs through Denmark and Central Europe, and extends southward to North Africa; while eastward it appears in the Crimea and in Syria, and may be traced as far as the shores of the Sea of Aral in Central Asia.

If all the points at which true chalk occurs were circumscribed, they would lie within an irregular oval about 3,000 miles in long diameter,—the area of which would be as great as that of Europe, and would many times exceed that of the largest existing inland sea,—the Mediterranean.

Thus the chalk is no unimportant element in the masonry of the earth's crust, and it impresses a peculiar stamp, varying with the conditions to which it is exposed, on the scenery of the districts in which it occurs. The undulating downs and rounded coombs, covered with sweet grassed turf, of our inland chalk country, have a peacefully domestic and mutton-suggesting prettiness, but can hardly be called either grand or beautiful. But on our southern coasts, the wall-sided cliffs, many hundred feet high, with vast needles and pinnacles standing out in the sea, sharp and solitary enough to serve as perches for the wary cormorant, confer a wonderful beauty and grandeur upon the chalk headlands. And in the East, chalk has its share in the formation of some of the most venerable of mountain ranges, such as the Lebanon.

What is this wide-spread component of the surface of the earth and whence did it come?

You may think this no very hopeful inquiry. You may not unnaturally suppose that the attempt to solve such problems as these can lead to no result save that of entangling the inquirer in vague speculations, incapable alike of refutation and of verification.

If such were really the case, I should have selected some other subject than a "piece of chalk" for my discourse. But, in truth, after much deliberation, I have been unable to think of any topic which would so well enable me to lead you to see how solid is the foundation upon which some of the most startling conclusions of physical science rest.

A great chapter of the history of the world is written in the chalk. Few passages in the history of man can be supported by such an overwhelming mass of direct and indirect evidence as that which testifies to the truth of the fragment of the history of the globe, which I hope to enable you to read with your own eyes to-night.

Let me add, that few chapters of human history have a more profound significance for ourselves. I weigh my words well when I assert, that the man who should know the true history of the bit of chalk which every carpenter carries about in his breeches pocket, though ignorant of all other history, is likely, if he will think his knowledge out to its ultimate results, to have a truer, and therefore a better, conception of this wonderful universe, and of man's relation to it, than the most learned student who is deep read in the records of humanity and ignorant of those of nature. The language of the chalk is not hard to learn, not nearly so hard as Latin, if you only want to get at the broad features of the story it has to tell; and I propose that we now set to work to spell that story out together.

We all know that if we "burn" chalk the result is quicklime. Chalk, in fact, is a compound of carbonic acid gas and lime, and when you make it very hot the carbonic acid flies away and the lime is left.

By this method of procedure we see the lime, but we do not see the carbonic acid. If, on the other hand, you were to powder a little chalk, and drop it into a good deal of strong vinegar, there would be a great bubbling and fizzing, and finally a clear liquid in which no sign of chalk would appear Here you see the carbonic acid in the bubbles; the lime, dissolved in vinegar, vanishes from sight. There are a great many other ways of showing that chalk is essentially nothing but carbonic acid and quicklime. Chemists enunciate the result of all the experiments which prove this, by stating that chalk is almost wholly composed of "carbonate of lime."

It is desirable for us to start from the knowledge of this fact, though it may not seem to help us very far towards what we seek, for carbonate of lime is a widely spread substance, and is met with under very various conditions. All sorts of limestones are composed of more or less pure carbonate of lime. The crust, which is often deposited by waters which have drained through limestone rocks in the form of what are called stalagmites and stalactites, is carbonate of lime. Or, to take a more familiar example, the fur on the inside of a tea kettle is carbonate of lime; and, for anything chemistry tells us to the contrary, the chalk might be a kind of gigantic fur upon the bottom of the earth-kettle, which is kept pretty hot below.

Let us try another method of making the chalk tell its own history. To the unassisted eye chalk looks simply like a very loose and open kind of stone. But it is possible to grind a slice of chalk down so thin that you can see through it,—until it is thin enough, in fact, to be examined with any magnifying power that may be thought desirable. A thin slice of the fur of a kettle might be made in the same way. If it were examined microscopically, it would show itself to be a more or less distinctly laminated mineral substance, and nothing more.

But the slice of chalk presents a totally different appearance when placed under the microscope. The general mass of it is made up of very minute granules; but embedded in this matrix are innumerable bodies, some smaller and some larger, but, on a rough average not more than a hundredth of an inch in diameter, having a well-defined shape and structure. A cubic inch of some specimens of chalk may contain hundreds of thousands of these bodies, compacted together with incalculable millions of the granules.

The examination of a transparent slice gives a good notion of the manner in which the components of the chalk are arranged, and of their relative proportions. But, by rubbing up some chalk with a brush in water, and then pouring off the milky fluid, so as to obtain sediments of different degrees of fineness, the granules and the minute rounded bodies may be pretty well separated from one another, and submitted to microscopic examination, either as opaque or as transparent objects. By combining the views obtained in these various methods, each of the rounded bodies may be proved to be a beautifully constructed calcareous fabric, made up of a number of chambers, communicating freely with one another. The chambered bodies are of various forms. One of the commonest is something like a badly grown raspberry, being formed of a number of nearly globular chambers of different sizes congregated together. It is called *Globigerina*, and some specimens of chalk consist of little else than *Globigerinæ* and granules.

Let us fix our attention upon the *Globigerina*. It is the the spoor of the game we are tracking. If we can learn what it is, and what are the conditions of its existence, we shall see our way to the origin and past history of the chalk.

A suggestion which may naturally enough present itself is, that these curious bodies are the result of some process of aggregation which has taken place in the carbonate of lime; that, just as in winter, the rime on our windows simulates the most delicate and elegantly arborescent foliage,—proving that the mere mineral, water, may, under certain conditions, assume the outward form of organic bodies,—so this mineral substance, carbonate of lime, hidden away in the bowels of the earth, has taken the shape of these chambered bodies. I am not raising a merely fanciful and unreal objection. Very learned men, in former days, have even entertained the notion that all the formed things found in rocks are of this nature; and if no such conception is at present held to be admissible, it is because long and varied experience has now shown that mineral matter never does assume the form and structure we find in fossils If any one were to try to persuade you that an oyster shell (which is also chiefly composed of carbonate of lime) had crystallized out of sea-water, I suppose you would laugh at the absurdity. Your laughter would be justified by the fact that all experience tends to show that oyster shells are formed by the agency of oysters, and in no other way. And if there were no better reasons we should be justified, on like grounds, in believing that *Globigerina* is not the product of anything but vital activity.

Happily, however, better evidence in proof of the organic nature of the *Globigerinæ* than that of analogy is forthcoming It so happens that calcareous skeletons, exactly similar to the *Globigerinæ* of the chalk, are being formed, at the present moment, by minute living creatures, which flourish in multitudes, literally more numerous than the sands of the sea shore, over a large extent of that part of the earth's surface which is covered by the ocean.

The history of the discovery of these living *Globigerinæ*, and of the part which they play in rock-building, is singular enough. It is a discovery which, like others of no less scientific importance, has arisen, incidentally, out of work devoted to very different and exceedingly practical interests.

When men first took to the sea they speedily learned to look out for shoals and rocks, and, the more the burden of their ships increased, the more imperatively necessary it became for sailors to ascertain with precision the depth of the waters they traversed. Out of this necessity grew the use of the lead and sound line; and, ultimately, marine surveying which is the recording of the form of coasts and of the depth of the sea, ascertained by the sounding lead upon charts.

At the same time it became desirable to ascertain and to indicate the nature of the sea bottom, since this circumstance greatly affects its goodness as holding ground for anchors. Some ingenious tar, whose name deserves a better fate than the oblivion into which it has fallen, attained this object by arming the bottom of the lead with a lump of grease to which more or less of the sand or mud or broken shells, as the case might be, adhered, and was brought to the surface. But, however well adapted such an apparatus might be for rough nautical purposes, scientific accuracy could not be expected from the armed lead, and to remedy its defects (especially when applied to sounding in great depths), Lieutenant Brooke, of the American Navy, some years ago invented a most ingenious machine by which a considerable portion of the superficial layer of the sea bottom can be scooped up and brought up from any depth to which the lead descends.

In 1853, Lieutenant Brooke obtained mud from the bottom of the North Atlantic, between Newfoundland and the Azores at a depth of more than 10,000 feet, or two miles, by the help of this sounding apparatus. The specimens were sent for examination to Ehrenberg of Berlin, and to Bailey of West Point, and those able microscopists found that this deep sea mud was almost entirely composed of the skeletons of living organisms,—the greater proportions of these being just like the *Globigerinæ* already known to occur in the chalk.

Thus far the work had been carried on simply in the interests of science, but Lieutenant Brooke's method of sounding acquired a high commercial value when the enterprise of laying down the telegraph cable between this country and the United States was undertaken. For it became a matter of immense importance to know, not only the depth of the sea over the whole line along which the cable was to be laid, but the exact nature of the bottom, so as to guard against chances of cutting or fraying the strands of that costly rope. The Admiralty consequently ordered Captain Dayman, an old friend and shipmate of mine, to ascertain the depth over the whole line of the cable, and to bring back specimens of the bottom. In former days such a command as this might have sounded very much like one of the impossible things which the young prince in the Fairy Tales is ordered to do before he can obtain the hand of the princess. However, in the months of June and July, 1857, my friend performed the task assigned to him with great expedition and precision, without, so far as I know, having met with any reward of that kind. The specimens of Atlantic mud which he procured were sent to me, to be examined and reported upon.

The result of all these operations is that we know the contours and nature of the surface-soil covered by the North Atlantic for a distance of 1,700 miles from east to west, as well as we know that of any part of the dry land

It is a prodigious plain, one of the widest and most even plains in the world. If the sea were drained off, you might drive a wagon all the way from Valentia, on the west coast of Ireland, to Trinity Bay in Newfoundland. And, except upon one sharp incline, about 200 miles from Valentia, I am not quite sure that it would even be necessary to put the skid on, so gentle are the ascents and descents upon that long route. From Valentia the road would lie down hill for about 200 miles to the point at which the bottom is now covered by 1,700 fathoms of sea-water. Then would come the central plain, more than a thousand miles wide, the inequalities of the surface of which would be hardly perceptible, though the depth of the water upon it now varies from 10,000 to 15 000 feet; and there are places in which Mont Blanc might be sunk without showing its peak above water. Beyond this, the ascent on the American side commences, and gradually leads, for about 300 miles, to the Newfoundland shore.

Almost the whole of the bottom of this central plain (which extends for many hundred miles in a north and south direction) is covered by a fine mud, which when brought to the surface, dries into a grayish-white friable substance You can write with this on a blackboard, if you are so inclined, and to the eye it is quite like very soft, grayish chalk. Examined chemically, it proved to be composed almost wholly of carbonate of lime; and if you make a section of it in the same way as that of a piece of chalk was made, and view it with the microscope, it presents innumerable *Globigerinæ* embedded in a grannular matrix.

Thus this deep sea mud is substantially chalk. I say substantially, because there are a good many minor differences; but as these have no bearing upon the question immediately before us—which is the nature of the *Globigerinæ* of the chalk—it is unnecessary to speak of them.

Globigerinæ of every size, from the smallest to the largest, are associated together in the Atlantic mud, and the chambers of many are filled by a soft animal matter This soft substance, is, in fact, the remains of the creature to which the *Globigerinæ* shell, or rather skeleton, owes its existence,—and which is an animal of the simplest imaginable description. It is, in fact, a mere particle of living jelly, without defined parts of any kind,—without a mouth, nerves, muscles, or distinct organs, and only manifesting its vitality to ordinary observation by thrusting out and retracting, from all parts of its surface, long filamentous processes, which serve for arms and legs. Yet this amorphous particle, devoid of everything which in the higher animals we call organs, is capable of feeding, growing, and multiplying; of separating from the ocean the small proportion of carbonate of lime which is dissolved in sea-water; and of building up that substance into a skeleton for itself, according to a pattern which can be imitated by no other known agency.

The notion that animals can live and flourish in the sea at the vast depths from which apparently living *Globigerinæ* have been brought up does not agree very well with our usual conception respecting the conditions of animal life; and it is not so absolutely impossible as it might at first sight appear to be, that the *Globigerinæ* of the Atlantic sea-bottom do not live and die where they are found.

As I have mentioned, the soundings from the great Atlantic plain are almost entirely made up of *Globigerinæ* with the

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granules which have been mentioned and some few other calcareous shells; but a small percentage of the chalky mud—perhaps at most some five per cent of it—is of a different nature, and consists of shells and skeletons composed of silex or pure flint These silicious bodies belong partly to those lowly vegetable organisms which are called *Diatomaceæ*, and partly to those minute and extremely simple animals termed *Radiolariæ*. It is quite certain that these creatures do not live at the bottom of the ocean but at its surface,—where they may be obtained in prodigious numbers by the use of a properly constructed net. Hence it follows that these silicious organisms, though they are not heavier than the lightest dust, must have fallen in some cases through fifteen thousand feet of water before they reached their final resting place on the ocean floor. And considering how large a surface these bodies expose in proportion to their weight, it is probable that they occupy a great length of time in making their burial journey from the surface of the Atlantic to the bottom.

But if the *Radiolariæ* and Diatoms are thus rained upon the bottom of the sea from the superficial layer of its waters, in which they pass their lives, it is obviously possible that the *Globigerinæ* may be similarly derived; and, if they were so, it would be much more easy to understand how they obtain their supply of food than it is at present. Nevertheless the negative and positive evidence points the other way. The skeletons of a full-grown deep sea *Globigerinæ* are so remarkably solid and heavy in proportion to their surface as to seem little fitted for floating; and, as a matter of fact, they are not to be found along with the Diatoms and *Radiolariæ* in the uppermost stratum of the open ocean.

It has been observed again, that the abundance of *Globigerinæ* in proportion to other organisms of like kind, increases with the depth of the sea; and that deep-water *Globigerinæ* are larger than those which live in shallower parts of the sea; and such facts negative the supposition that these organisms have been swept by currents from the shallows into the deeps of the Atlantic.

It therefore seems to be hardly doubtful that these wonderful creatures live and die at the depths in which they are found.

However, the important points for us are that the living *Globigerinæ* are exclusively marine animals, the skeletons of which abound at the bottom of deep seas; and that there is not a shadow of reason for believing that the habits of the *Globigerinæ* of the chalk differed from those of the existing species. But if this be true, there is no escaping the conclusion that the chalk itself is the dried mud of an ancient deep sea.

(To be continued.)

ICE MACHINES.

(Continued from page 196.)

Since publishing the former article, a pamphlet has appeared in Germany containing a short description of the modern ice machines, in which, however, the American inventions and improvements, as usually is the case with European publications, are totally overlooked. We possess here a decided avantage over Europe, in the fact that Americans always keep themselves posted about European inventions and improvements, while Europe has not yet come fully to the persuasion of the great importance of our inventions and improvements, and how useful it would be, always to take due notice of them.

We see from the German pamphlet referred to, that five different forms of the machine described by us, have been patented in Europe, the first by Vranken in Cologne and Meller in Essen, a second by Grubeaud, a third by Penant, a fourth by Fouju, and a fifth by Toselli. None of them possess any striking peculiarity or advantage, their differences being of the same mechanical kind as in the different cream freezers so well known in this country, and on which there exist several scores of United States patents. In general they all resemble our cream freezers, of which many could be used for ice machines of this description; perhaps some of them have already been patented in this country as such.

We will only add a few more freezing mixtures to our list, page 196:

MIXTURES.	PARTS.	DESCENT OF THERMOMETER.
Carbonate of Soda	1	70° Fah.
Nitrate of Potash	1	
Water	1	
Chloride of Ammonium	1	66°
Water	1	
Sulphate of Soda	3	70°
Water	2	
Nitrate of Ammonia	1	50°
Water	1	

As these mixtures are made simply with water, and not with acids, the ingredients may be regained by evaporation and recrystallization of the salts, and therefore they are much less expensive than the solutions in acids, mentioned on page 196. It is curious that also here heat must be employed in order to return to the salts their cold-producing qualities, and in this sense the chemical ice machines described are related to those of the second class to be described next week, which operate entirely and solely by the previous application of heat.

The different makers of these machines recommend special solutions, according to the amount of success they obtained with them, in their machines. So the chloride of ammonium, saltpeter, and water (page 194) is recommended by Vranken; by Grubeaud, nitrate of ammonia, and water (see above); Penant recommends hydrated glauber salts and muriatic acid (hydrated sulphate of soda and hydrochloric acid); Toselli recommends crystallized soda and ammoniacal salt (he means probably carbonate of soda and nitrate of ammonia, or chloride of ammonium, or sulphate of ammonia, which are cheaper than the nitrate of ammonia.)

In order to be successful in these manipulations, they must be made with as large quantities as possible, the different salts must be well powdered, and, as well as the liquids used, be cooled before hand as much as practicable, the mixing of the ingredients must be done as rapidly as possible, and great care taken that no heat can be absorbed anywhere, except from the water to be cooled or frozen.

One more point must be observed in relation to this method of producing cold. When the salts are too dry, no cold will be produced, even heat, as in place of liquefaction, at first a solidification of water in the salt will take place, which of course in solidifying will set its latent heat of fluidity free, the same as takes place in pouring water on quicklime, which is anhydrous lime. This is illustrated in the cooling method of Berzelius, described on page 196. When the chloride of calcium* is too dry, as is the case with the fused anhydrous substance, it will commence with absorbing water, and solidifying it, to form first a hydrate. The heat thus produced in some portions, may counterbalance to a considerable extent the cold produced by other dissolving particles; from there the prescription of Berzelius, to let the salt, by powdering it and passing it through a sieve, absorb water from the atmosphere, previously to using it.

*On page 196, lines 23 and 31, in mentioning chloride of lime, we intended not the hypochlorite of lime, or bleaching powder, which is commonly erroneusly called chloride of lime, but we intended the above chloride of calcium, made from lime and hydrochloric acid.

Correspondence.

The Editors are not responsible for the opinions expressed by their correspondents.

"What Makes the Difference?"

MESSRS EDITORS.—An article which appeared in the SCIENTIFIC AMERICAN, of Oct. 14th, commenting upon the difference in social position, pay, etc, of mechanics and clerks, does not seem to me to touch the real point of the subject discussed.

In the first place, labor, *per se*, is not degrading, nor is it generally considered so, but many men working as mechanics do not take the pains to qualify themselves for social position. They affect to despise the points of etiquette, and other things considered essential in society, and cry out against them. There is no reason why a man working only ten hours per day should not have abundant time to study and perfect himself in all the rules of conduct for the best society, as it is called, that is the society of educated and refined people.

A young man who takes a little care to learn, and practice the rules of good society, and read works of a character tending to elevate and improve his mind will find plenty of opportunities for associating with people of the so-called first circles. In the circle of my acquaintance I know of many persons, who started in life as working mechanics who are now leaders of society, and I know others, having abundant means, so far as bare money is concerned, to gratify every desire and move in the highest circles, who are content to grovel along without any social intercourse, so to speak. It is not wealth alone that gives the entrée to refined circles, but it is mind, and the attention to points of etiquette which have become established in the course of centuries of attrition among crowds of gentle-men and gentle-women, known in ordinary conversation as "gentlemen and ladies."

Now clerks in stores are selected for their gentlemanly style of behavior; it is an essential qualification for a clerk that he should be polite and well behaved, and it is on account of their having these qualifications that they are better received in society than mechanics. Let a mechanic however, qualify himself for society and study to make himself agreeable, as clerks are obliged to be, and he can have the entrée of as good society as the clerk, in fact, my experience is that the workingman or mechanic, has advantages in social intercourse above the mere clerk, because, as a general thing his mind is superior. The training his mind receives in learning a trade improves him in more ways than one, if he only aims for superiority.

A MECHANIC.

[Our correspondent falls into the error that there is a distinction generally made in favor of clerks over mechanics, in regard to their admittance into good society. We repeat that we know of no society in this country—beyond a select and exclusive class to which neither would be elligible under ordinary circumstances—that makes any such distinction.

We dissent from the opinion that the servile and puppyish manners acquired in the counter-jumper's profession are superior in any respect to the manly independence yet general courtesy of mechanics. We affirm that as a class mechanics are infinitely better informed, have better minds, better health, look better and feel better, live better, earn more money, and use it more wisely than clerks in dry goods and fancy goods stores. Of course we dont include every kind of clerks in our expressions of opinion, but we do believe, man was created for a nobler purpose than peddling dolls or attending milliners' shops.

Our correspondent has missed the entire drift of our article, if he failed to see that the difference which we alluded to was in favor of the bricklayer, as compared with the fancy goods clerk, in his manliness, his mental ability, and his courage, and that these qualifications, not his greater wages, were the true secret of his power when he "strikes" and the want of them the very reason why the fancy goods clerk, *is* a fancy goods clerk, and why he will always bow his neck to the yoke, and submit to the exactions of his employers.—EDS.

Center of Gravity.

MESSRS. EDITORS:—The difficulty with Mr. McCarroll, about the centers of gravity in revolving wheels, arises from the fact that he does not, or has not, considered the difference between gravity (which is an immutable principle) and centrifugal force, which is changeable—being a mechanical force and not a principle. Gravity has no motion, but is the same every instant of time; and, hence, a wheel cannot be put in such rapid motion as to change the center of gravity. If it could, then we could have perpetual motions. Gravity cannot be changed by mechanical force, hence nature will, in every case, find its own balance; and thus no such thing as a self-moving machine, or perpetual motion, can be brought into existence.

JOHN S. WILLIAMS.

Thermometers—How to Select.

MESSRS. EDITORS:—I have just purchased a thermometer, made by Sargent & Co., and, on comparing it with one of Kendall's thermometers, I find a uniform difference of two degrees between the two instruments. There must be an error somewhere; but where is it? It cannot be in the tubes, for the improbability of two tubes having the same imperfections—which must be the case, other things being equal—to give uniform results, amounts to almost a moral impossibility. It cannot be in the graduations, or in the scales, for the same reason. If there be an error in the graduation of one of the tubes, or one of the scales, there must be precisely the same error in the other tube or scale, to give a uniform difference of two degrees. It is possible that the discrepancy is due to such a combination of errors in the two instruments as exactly compensate for each other, and so give uniformity of action; but this is too improbable to merit a moment's attention. The fault must, then, be sought for in the adjustment of the tubes to the scales. By the aid of a microscope I find, upon the Kendall tube, certain scratches or file marks, evidently made by the graduator, corresponding to the figures on the scale—32, 60, 100, and 140.

On the Sargent tubes are similar marks, corresponding to figures 34, 62, and 92. As the file marks upon the former occur at the definite figures or landmarks—32 "Freezing point," 60 "Temperate," 100, and 140; while those upon the latter at 34, 62, and 92—I conclude that the Kendall tube is properly adjusted to the scale, and that the Sargent tube is raised two degrees too high—an error which cannot be corrected without taking the instrument apart, and enlarging the upper hole in the brass scale. If the above premises and deductions are well founded, the inference is that both the instruments are perfect in all their parts, with the single exception that one of them is imperfectly put together.

It is a notorious fact that hardly two cheap thermometers exactly agree at all temperatures; but by comparing one instrument with another, and noticing whether the difference in the hight of mercury, if any, is uniform, at different temperatures; whether the file marks, which can generally be found by sliding the point of a knife along the sides of the tube, occur at definite figures or landmarks, of which 32 will always be one, and whether a portion of the mercurial column, broken off by a slight jar, occupies equal or varying lengths in different parts of the tube, it is not difficult to ascertain where the error if any is, and whether it is remediable.

J. H. PARSONS.

Eating Clouds.

Dr. Livingston, relating his adventures on Lake Nyassa, thus tells one curiosity which he fell in with: During a portion of the year, the northern dwellers on the lake have a harvest which furnishes a singular kind of food. As we approached our limit in that direction, clouds, as of smoke arising from miles of burning grass, were observed bending in a southeasterly direction, and we thought that the unseen land in the opposite side was closing in, and that we were near the end of the lake. But next morning we sailed through one of the clouds in our own side, and discovered that it was neither smoke nor haze, but countless millions of minute midges called "kungo" (a cloud of fog). They filled the air to an immense hight, and swarm upon the water too light to sink in it. Eyes and mouth had to be closed while passing through this living cloud, they struck upon the face like fine drifting snow. Thousands lay in the boat after emerging from the clouds of midges. The people gathered these insects by night and boiled them into thick cakes, to be used as a relish—millions of midges in a cake. A kungo cake an inch thick, and as large as the blue bonnet of a Scotch plowman, was offered to us, it was very dark in color, and tasted not unlike caviare or salted locusts.

Presto Change.

The *Richmond News*, says a man in that city is manufacturing butter by a chemical process at the rate of one pound and nine ounces from one pint of milk and two eggs. It says: "We know that the statement seems improbable; we know that people will turn up their eyes incredulously, and say, 'it can't be done, it can't be good,' etc., but the proof of the pudding is in the eating. The operation is performed every morning at nine o'clock, and every evening before sales commence at Mr. Smith's auction room, in the presence of crowds; and doubters are invited to go and see the butter made, and see it weighed, and then to taste it before they pronounce the thing impossible. The butter can be made in any churn, crock, or jar."

We have not the least doubt of the truth of this statement. We have heard that a French cook will make plenty of good soup from pebbles, provided a sufficient allowance of other materials are incorporated. So in this case we see no reason to doubt that one pound and nine onnces of butter can be made from a pint of milk and two eggs, provided the chemical employed in the process be one pound and a little over eight ounces of butter.

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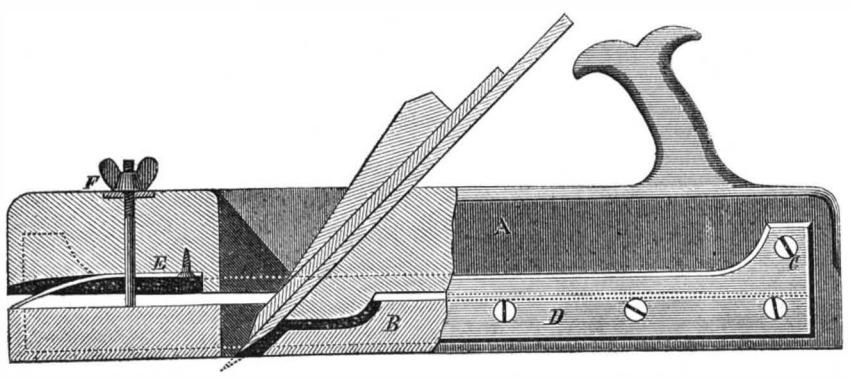
Improvement in Joiners' Planes.

The objects of the invention shown in the accompanying engraving are to give a control over the thickness of the shaving and depth of the cut by the pressure of the hand, and to prevent the drag of the bit on the board when the plane is drawn back. The stock of the plane is made in two parts, the upper portion, A, which holds the bit, being pivoted to the lower part, B, at the rear end by a screw, C, passing through metal guide plates, D, on each side the plane. The front end of the upper portion is raised from the lower portion by means of a spring, E, which, when the pressure of the hand on the front of the plane is withdrawn, lifts the upper portion together with the bit or plane iron. The amount of this movement is governed by the thumb screw, F. From this description and the engraving, which is partly in section, the construction and advantages of this device may be plainly seen.

Patented through the Scientific American Patent Agency, August 25, 1868, by George Buckel, who may be addressed at 17 Prospect street, Detroit, Mich.



BUCKEL'S ADJUSTING PLANE.

THE PROTUBERANCES ON THE SUN.

Among the several scientific expeditions sent to the East by the European governments for the purpose of observing the late total eclipse of the sun, was a photographic company under the auspices of the North German States. This party was led by the distinguished scientist and photographer, Dr. Vogel, whose interesting contributions often appear in our paper. A new photometer, or instrument for indicating the actinic power of light at all hours of the day, has been lately patented in this country by him. Dr. Vogel has communicated to the Philadelphia *Photographer*, and also to the London *Photographic News*, some interesting particulars concerning his photographic eclipse experiences, among which are the following:

We were not spared the sufferings generally imposed on the traveler who passes through the Red Sea at the hot time of the year. This sea, inclosed on both sides by deserts, and connected with the Indian Ocean only by a very narrow channel, forms an isolated bay, where, in consequence of the customary calms and want of currents in the water, the temperature increases in the same degree as you advance toward the south. The perspiration flows down your body just as if you were in a steam bath; the whole of the skin is heated and irritated, and happy is he who finds a spot on deck where a slight breeze cools him for a moment. We were glad to reach the more airy ocean, and anchor near Aden on the 2d of August.

The aspect of this town is not in the least an agreeable one. You see a quite bare, savage mass of rocks, interrupted by some works of fortification, warehouses, shops, and coal sheds. The heat was supportable as long as we were not at work, but as soon as we began the slightest exertions the discomfort was very great.

At the day of the eclipse we rose at four o'clock in the morning. It was the task of the North German expedition to make a photographic view of the eclipse during its totality. For this purpose we had a long telescope with a lens of six inches, without difference of focus, and with a focal distance of six feet. This lens, constructed by Steinheil, afforded a solar image of three quarters of an inch in diameter, which was taken upon a photographic plate by means of an ordinary sliding chest for two images.

The totality of the eclipse at Aden was about three minutes long (in India five minutes); nevertheless, we had chosen Aden for our station because there were already photographic observers in India, and because the totality appeared at Aden about an hour earlier than in India. Therefore a comparison of the different results would enable us to decide the question, if the *protuberances* appearing at a total eclipse of the sun were changing in the course of time or not.

Our task was now to get within these three minutes as many views of the phenomenon as possible. For this purpose we had previously exercised ourselves in the employment of the photographic telescope, like artillerymen with their guns.

Dr. Fritsche prepared the plates in the first tent, Dr. Zenker put the sliding chests into the telescope, Dr. Thiell exposed, and I myself developed in the second tent.

We stated that it was possible in this way to get six images (three plates of two images) during three minutes.

When the decisive moment was fast advancing, the sky, hitherto covered with clouds, showed some openings, through which the sun, already covered partially by the moon, was to be seen. The landscape around was illuminated by the strangest light, a medium between moon and sun light.

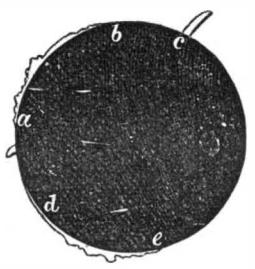
The chemical strength of light was exceedingly weak. A proof plate gave a wholly exposed image of the cloud after fifteen seconds. The sun cresent became smaller and smaller, and the opening in the clouds seemed to increase.

The last minutes before the totality (which began at twenty minutes past six o'clock) went rapidly away. Dr. Fritsche and myself crept into the tents, where we remained, consequently we have seen nothing of the totality. Our work began; we exposed the first plate five and ten seconds, in order to know what was the just time.

Muhammed, our black servant, brought the first attempt into my tent. I poured the iron developer over the plate, eager to know what was to come. At this moment my light was extinguished. I called for light, but nobody heard me, as all were about their task. I stretched my right hand out of the tent, holding the chest in the left, and happily caught a small oil lamp, which I had previously prepared. And now I saw the image of the sun appearing on the plate. The dark margin of the sun was surrounded by a series of peculiar elevations, the other side showed a strange hook; the phenomenon being exactly the same in both views. My joy was great, but there was no time for enjoyment. I soon received the second, and, after another minute, the third plate. "The sun is coming forth!" exclaimed Dr. Zenker. The totality was over. All this seemed to have been done in a moment.

When I developed the second plate I perceived only very weak traces of an image. The clouds had veiled the sun at the very moment of the exposure. The third plate gave two brilliant views, with protuberances at the lower margin. Glad to have reached so much, we washed, fixed, and varnished the plates, and immediately took some copies on glass, which were to be dispatched to Europe separately.

I here give you a design of the plate. Over the margin of the sun we see the protuberances, *a b;* on the opposite side we perceive the strange hook already mentioned. Its height was about one-fourteenth of the sun's diameter, and it would therefore in reality be 12,000 miles high. On the third plate we got the protuberances, *d e*, at the lower margin.



Great and Small—Microscopes.

A correspondent of the Boston *Journal of Chemistry* says:

"There is a curious principle (which may be perhaps called physiological) involved in the terms *great* and *small*. It is this: that one has no conception of magnitude except by comparison of one object with another; and no one has or can have any knowledge of the appearance of magnitude to any other one. That is, I cannot convey to you my idea of the size of any object except by comparing it with my idea of the size of some other object. If I say that a thing appears to me to be one inch long, I merely compare it with an inch rule; but I do not, cannot know, that an inch appears to you as long as a foot does to me, or the reverse. Again, when one looks at an object that is completely isolated (to the vision) from all other objects with which it might be compared, we form an idea of its magnitude entirely arbitrary. For example, the moon in a clear sky must present exactly the same apparent magnitude to every observer. This is determinable mathematically; yet it is notorious, that, of a dozen people who may be asked their idea of the moon's apparent size, no two may agree.

"This same fact comes out in the use of the microscope. Almost all novices in the use of that instrument ask what is the magnifying power, as if the answer to that covered the main value of the instrument, thinking that the more it magnifies the better it must be; when in fact power is a secondary consideration in the value of a microscope, great power of inferior quality being obtainable at very little cost, and that what is called the magnifying power is calculated from an arbitrary standard. The apparent size of any one object in the field of the microscope is by all observers governed by their estimate of the apparent diameter of the illuminated field in which the object is seen. There are modes of determining this by comparison with other objects, but as the instrument is generally used, nothing is presented to the eye but the 'field,' and no other object is compared. Under these circumstances, different persons make widely different estimates of the size of the field. I once tried the experiment of obtaining their estimate of the apparent size from ten individuals, all of them accustomed to the use of the instrument, and they varied from 9½-inch diameter down to 2-inch (my own case). I have since met an individual who estimated it 15 inches. Any one possessed of a microscope can try this experiment, and it will be found to afford a company much amusement, and excite great surprise.

"Now, it is self-evident, that to the one who made the estimate of 15-in., any object of, say 1-1000 of an inch in length, would *seem* to be seen 7½ times as large as it seemed to me, although we must have seen it exactly alike. Thus, the only conception of magnitude is comparative."

Cook's Telegraph.

We have before us as we write some very beautiful specimens of printing by Cook's improvement of the late Gaetano Bonelli's automatic printing apparatus, just received from Paris. The printing is done in fine bold letters, the words well compacted and spaced, and printed not on a continuous strip, but line under line, as in a printed circular. It is certainly a very admirable result, and indicative of a perfection in telegraphy and a use of the subtile powers of electricity which must enhance the acceptability of the telegraph to the public. The great advantage of the autographic process is that it renders error next to impossible, or rather, that it does not leave to the action of outside causes, or the use of arbitrary characters whose relations to each other may be misunderstood, or to the vagaries of an operator's brain as he manipulates his messages, letter by letter, the opportunity to change their composition. The message is set up and compared before it is transmitted, and if it goes at all, must go exactly as first prepared

The paragraph before us is one of 35 words, transmitted in 20 seconds, a speed equal to 315 messages of twenty words each per hour. This fact is suggestive of a future in which the entire labor of our offices will be changed, and the operation of transmission become simply mechanical and comparatively unlaborious. We will not be surprised if, in time, parties who prosecute much of their business by telegraph should supply themselves with telegraphic type, arrange their messages for transmission in a case adopted for that purpose, prove them before sending to the telegraph office, and the operator have nothing to do but pass them through the manipulating instrument. By such processes as these only can large quantities of matter be sent over the wires without the fatigue connected therewith, and, what is equally desirable, with the utmost assurance of correctness which mechanism can afford.—*Journal of the Telegraph.*

Editorial Summary.

THE VELOCIPEDE MANIA is beginning to set in, and with the opening of the spring months we may expect to see our parks and highways thronged with this cheap and agreeable substitute for the horse. The two-wheeled velocipede is not exactly the thing wanted for general use, as it will be somewhat difficult for novices to keep upright upon it. A nicely adjusted vehicle with a double hind wheel would be most desirable for all classes. The ladies will need something of the kind, and for obvious reasons; unless they don the Bloomer costume, they will not be able to ride on the two-wheeled machine. It appears to us, judging from the numerous letters we receive on the subject, that there is to be a brisk demand for a good velocipede, and whoever gets into the field first will find it a profitable speculation.

GEOLOGICAL NEGATIVES.—Mr. James Thompson, of Glasgow, Scotland, has contrived a new method of producing photographic negatives of geological specimens. He saws from the stones thin slices containing fossil remains or other specimens; these when polished are so thin and transparent that they may be used as negatives for photographic printing upon the usual sensitive paper. Beautiful prints are thus obtained, having all the fidelity of nature itself. Large numbers of these fossil negatives have been prepared by Mr. Thompson, and he has undertaken to supply the British Museum with duplicates.

IT is proposed to remove Yale College from its present site to a more suburban one, thereby securing to the institution an accession of funds from the sale of its property, which, from its central location, is of great value. The value of this property is sufficient, it is said, to to purchase and fit up suitable grounds, erect buildings, and leave an endowment of a quarter of a million dollars, should the proposal be acted upon. The removal of the college is also said to be worthy of consideration for sanitary reasons.

THE Powell Scientific Expedition ascended to Longs Peak, in the Rocky Mountain range, on the 23d inst. After making the usual scientific observations a monument was erected as evidence of the visit. In it was placed a tin case containing a record of the observations with date, names of party, etc; A flag was planted and left flying. This peak is a celebrated landmark. Its hight however is not remarkable, being only 14,250 feet above the sea level.

THE English scientific papers are criticising severely our new war steamers. They say that the entire new steam machinery of the United States navy is the most costly, most cumbrous, least efficient, and most utterly ridiculous in the world, and that no other power in Christendom would tolerate such blunders in its national engineering practice.

COMETS SELF-LUMINOUS.—The London *Daily News*, says that the special points of interest attaching to the two comets of this year—Borsen's and the new one—is the remarkable discovery that both comets are gaseous and self-luminous, and that the latter consists of volatilized carbon.

CIDER may be preserved sweet for years, by putting it up in air-tight cans after the manner of preserving fruit. The cider should be first settled and racked off from the dregs, but fermentation should not be allowed to commence before canning.

IT is stated as a fact worthy of note, that London was recently exempt from accidental or incendiary fires, for a period of twelve hours.

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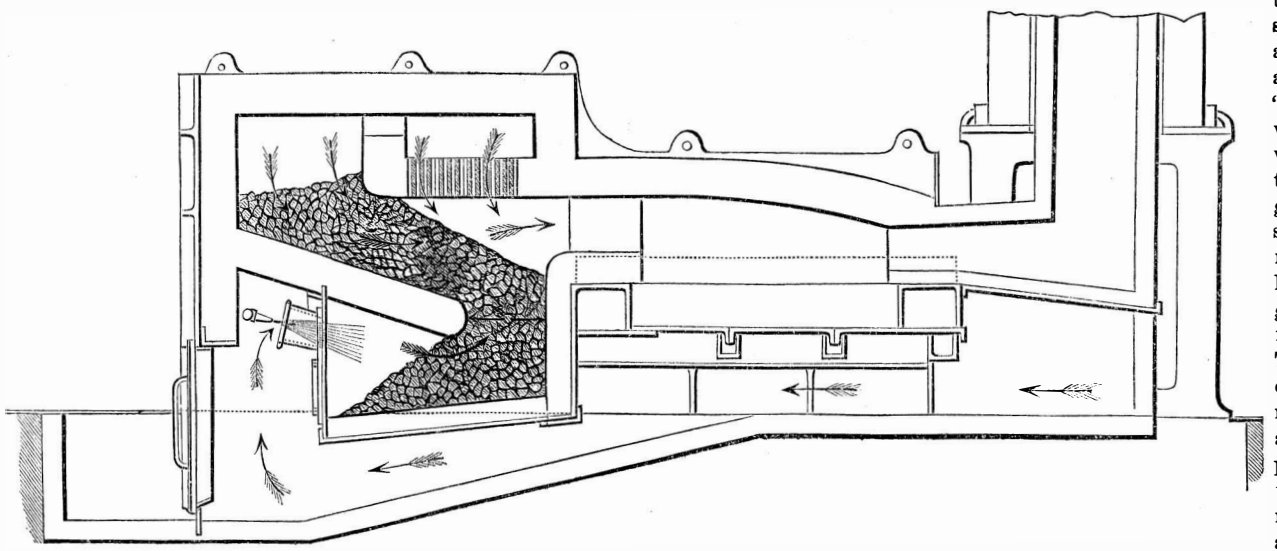
Improvement in the Process of Puddling Iron.

From the London *Mining Journal* we transfer the engraved plan and notice of a new puddling furnace now making considerable stir in England :-

" Mr. John Jones, the able secretary of the Iron Trade Association in the North or England, read a paper at the meeting of the British Association for the Advancement of Science, at Norwich, on the Economical Manufacture of Iron. He there states that, according to information he has gathered, the furnace is being adopted in the Cleveland district, and that the saving of fuel is 20 to 25 per cent., that the consumption is 1,500,000 tuns of coals per annum in the production of our finished iron, and that the subject is one of national importance.—This paper was followed by one by Mr. Siemens, F.R.S., the well-known eminent inventor of the gas-furnace, in which he gives some very interesting details of the working of a puddling-furnace on his system, justly claiming extraordinary merit therefor, on account of it producing a larger quantity of iron than the ordinary system of furnace permits. Mr.Cowper stated that, in his opinion, one great cause of the superior yield, as also quality of the iron, was that the great heat of Mr.Siemens'furnace caused it to run more freely from the cinder than was possible in an ordinary furnace.



WILSON'S PUDDLING FURNACE.

" With these preliminary remarks, we will now go into more detail. Messrs. W. Whitwell & Co., the Thornaby Iron Works, Stockton-on-Tees, so well known for their energy, enterprise, and determination to hold a first rank in the Cleveland iron trade, put up their first furnace in January this year ; it was very successful, but it had grate bars at the bottom, partly to meet the prejudices of the men, and to overcome them. In the month of March Mr. Wilson persuaded them to allow him to put up a furnace without bars, which he did. Forthwith the success was positive, all difficulties had completely vanished. For a little time minor points of construction had to be met ; but for some time every furnace was put up exactly like its neighbor, and at this moment nearly all the furnaces at the above works are on Mr. Wilson's system. Several of the woks in the district have trial furnaces at work, the results fully bearing out those of Messrs. Whitwell.

" At a trial made by Messrs. Hopkins, Gilkes & Co. (week 6th to 11th July inclusive), the coals used were 17 cwts. 1 qr. 22 lbs. to the tun of puddled bar ; the yield of iron in excess. Another experiment (week ending Aug. 22), the coals used were 16¾ cwts. to the tun ; 1¼ tun of fettling saved—iron charged, 13 tuns 16 cwts. 3 qrs. 13 lbs. ; iron drawn, 12 tuns 18 cwts. 0 qr. 16 lbs. ; loss, 18 cwts. 2 qrs. 27 lbs. Messrs. Richardson, Johnson & Co., of the North Yorkshire Iron Works, Stockton, furnish a return (Aug. 31), coals, 18 cwts. to the tun of iron ; yield, 13 lbs. average per heat in excess of ordinary furnace. Messrs. Whitwell and Co. are charging all their patent furnaces 4¾ cwts. per heat, and they find very little loss of iron; the quality is in all cases superior. We think that these statements justify us in saying that the ironmasters have an opportunity of saving a large amount of money in the manufacture of iron, and we trust such an invention will not be allowed to languish and struggle into notoriety by slow degrees, as most of our inventions have to, no matter how great their benefit to the public.

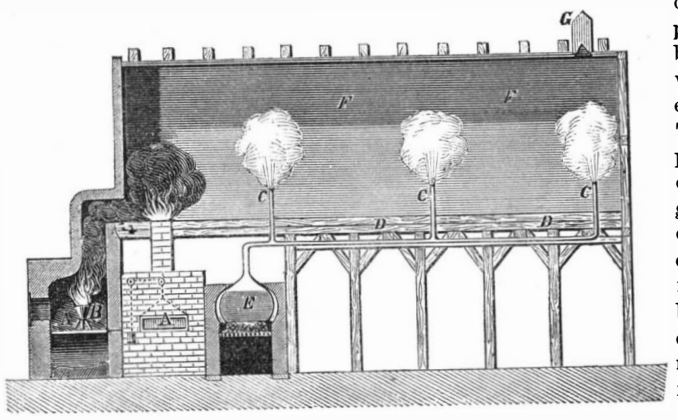
" We will now point out the improvements in the furnace. Air is forced into the flue-bridge by a steam-jet ; it passes into a conduit at the back of the furnace, thence into the flame-bridge and up into a chamber, where it arrives red-hot ; it thence passes down into and on to the incandescent fuel.

" By this arrangement much fettling is saved, being the cause of a great economy. Mr. Siemens states that his furnace used an extra quantity of fettling, which reduced the benefit of his good yield of iron. But to obviate this, he adopted water-bridges (these are much used); they absorb much heat from the furnace—this gentleman states equal to 8 or 10 lbs. of coals per heat. We think this a low estimate, as the getting up has to be taken into account. However, it is obvious that, by the arrangement described above, the heat abstracted by the circulating current of air is restored to the furnace ; this forms an important feature in the improvement. The fuel is fed at the highest point of the furnace by a slide door on the standing, and there are proper arrangements for shoring up, when required, also on the standing. A current or currents of air are also forced in below into a closed chamber, by which the cinders are most completely burnt up. The steam being decomposed passing through the incandescent fuel, transfers the intense heat into the working chamber. The quantity of refuse produced is very small. The clinkers are readily removed with a light hook, and the men are never occupied more than a few minutes in the operation, generally one minute. Thus, we are justified in saying this is perfect combustion ; it appears to us there is no room for further improvement. But to restore the waste heat into the generator, furnaces are now being put up by Messrs. Hannah & Sons, under the superintendence of their manager, Mr. Badon, formerly of Jarrow, where pretty nearly all the heat will be regenerated. These furnaces can go to any intensity, and the flame is under perfect control to oxidize or not ; or the iron may be drenched with intensely hot air. The cost of alteration to existing furnaces is very small ; when erecting new ones about the same price. The advantages obtained are no smoke, no cinders, a large yield of iron, and better in quality. If we assume 25 cwts. of coals used as the Cleveland average for puddling, it appears to be about 8 cwts. to the tun saved. Much fettling is saved, there are less repairs, and no grate bars to replace. We think there is sufficient inducement to ask its adoption." The editor of the *Journal* adds :

" In the supplement to this week's *Mining Journal* will be found an interesting communication from a correspondent who has had considerable experience in iron making, describing the recent improvements introduced by Mr. E. B. Wilson in the construction of his patent furnaces, and which are considered to make the furnace absolutely perfect. We are glad to learn that the increased yield of the Wilson furnace, as compared with that of ordinary construction, averages 13 lbs. per heat, the loss of iron being at the same time much reduced, and the quality being in all cases superior. The new furnaces are now in use at Messrs. Whitwell & Co.'s Thornaby Iron Works, Stockton-on-Tees ; at Messrs. Richardson, Johnson & Co.'s North Yorkshire Iron Works, Stockton ; at Messrs. Hopkins, Gilkes & Co.'s ; and at several other works, and appear in all cases to give great satisfaction. Having had the opportunity of seeing the Wilson furnaces in actual use, our correspondent is, no doubt, in a position to form an opinion of its merits. He states that the perfected furnaces make neither smoke nor cinders, give a large yield of iron, and of better quality ; that 8 cwts. of coal is saved per tun of iron puddled ; that the first cost of the furnace is no greater than usual ; and that there are less repairs, and no grate bars to replace. These recommendations should, it is thought, secure its adoption."

SULPHUR---ITS USES IN THE ARTS.

Every one of our readers is acquainted with the appearance of sulphur. Possibly many of them were made acquainted with its medical properties early in life, like Squeer's schoolboys, to whom it was regularly administered, as a measure of economy, in molasses, always before breakfast. It is quite possible that many are not so familiar with its chemical properties and its extended use in the arts. It is kept for sale everywhere in two forms ; roll sulphur, popularly known as brimstone, formed by concretion after fusion, and in a powdered state, obtained by pulverizing the roll sulphur, by sublimation, or precipitation from its solution in limewater by muriatic acid. Sublimation is the heating of any solid substance until it becomes vaporized, and collecting it again when cooled by passing the vapor into a refrigerating chamber. Sulphur thus sublimed can be obtained in a very fine and impalpable state, called flowers of sulphur. When obtained from the solution as described above, it is called lac-sulphur, or milk of sulphur.



SULPHURIC ACID CHAMBER.

Sulphur is an element, that is, it has never been found to be resolvable into other substances. Its affinities or tendencies to unite with other substances are numerous and strong, and under favorable circumstances it will combine with a vast number of simple and complex bodies. Its combinations with simple substances or elements are called sulphurets or sulphides. Such compounds form a large proportion of the ores of different metals, as they are found in nature. A simple experiment will illustrate the formation of these ores. Mix 21 parts by weight of flowers of sulphur with 30 parts of iron, and put it gradually into a red-hot crucible, waiting until each portion becomes incandescent before adding more. After the whole is put in, cover the crucible and raise the heat until the entire mass is fused. The compound is called the proto-sulphide of iron. There are also other sulphides of iron, which contain more sulphur in proportion to the weight of the mass than the proto-sulphide. Of these the bisulphide may be mentioned. It has a pale yellow metallic luster, and has often been mistaken for gold by the inexpert. In the early settlement of this country an enterprising adventurer shipped a whole cargo of this substance to England, supposing it to be gold, and that he had, to use a quite modern phrase, "struck oil." His chagrin was great upon finding the value of his venture less than an equal bulk of good garden soil. So many similar mistakes have been made that the substance has been called "fools' gold." The mineralogical name for it is iron pyrites. These sulphides are types of the sulphides of other metals, as found native or artificially produced. The proto-sulphide of iron is used in the laboratory for making hydro sulphuric acid gas, to which the names sulphydric acid and sulphureted hydrogen are also given. Hydrosulphuric acid is a most valuable reagent in analytical chemistry, and therefore deserves some mention here. When fragments of proto-sulphide of iron are thrown into dilute sulphuric acid, a series of reactions take place, which may be described as follows:

Sulphuric acid is a combination of sulphur and oxygen ; the proto-sulphide of iron is a combination of sulphur and iron ; the water used to dilute the acid is a combination of oxygen and hydrogen. When these couples come together, iron, which loves not sulphur less but oxygen more, deserts its own partner and unites with the faithless oxygen of the water, which leaves fond hydrogen desolate. Sulphur and hydrogen, under these circumstances, mutually sympathizing with each others wrongs, strike up a bargain, and agree to unite their fortunes. The sulphuric acid aids and abets the disruption by providing for the protoxide of iron as fast as it is formed by the union of iron and oxygen, and uniting with it, forms the sulphate of iron. The sulphureted hydrogen formed by the union of the sulphur and hydrogen not being so fortunate, goes off in exceedingly bad odor. The smell of this gas is discernable in the decay of all organic substances which contain sulphur, as turnips, cabbages, eggs, etc. The smell of rotten eggs is its most prominent characteristic, and is the principal test for its presence. The most minute quantities, imperceptible to smell, may be detected by moistening a bit of paper with a solution of acetate of lead. Paper so prepared is turned black by the action of the gas. The reason for this change of color will give the clue to the value of this reagent in chemical analysis. Metallic salts are formed by the union of their oxides with acids. When sulphydric acid comes in contact with solutions of these salts, a mutual decomposition takes place, the hydrogen of the sulphydric acid unites with the oxygen in the metallic base, and forms water, while the sulphur combines with the metal itself, to form a sulphide which generally falls to the bottom as a bulky precipitate. The conditions under which these reactions take place vary for different metals. Thus, the metals capable of being precipitated may be classed into groups. The alkalies are not precipitated by it under any circumstances, neither are the alkaline earths. A third group, comprising the salts of alumina and the sesquioxide of chromium, and a number of others of very rare occurrence, are not precipitated by sulphydric acid but by sulphide of ammonium. The metals of the third group and the remaining metals are precipitated under certain conditions, either by sulphide of ammonium or by sulphureted hydrogen, the precipitate being in the third group a hydrated oxide, that is, an oxide combined with water, and in all other cases a sulphide, or the mixed sulphides of all the metals precipitable by these reagents. Suppose now a chemist wishes to determine whether sodium is a constituent of a very complex solution under examination. By passing a sufficient quantity of sulphureted hydrogen through the solution under the proper conditions, he can eliminate all the metals, except the groups above specified not precipitable by this reagent. The field of research is thus greatly narrowed, and a very long step is taken toward the complete isolation of the substance sought. This brief description will give a correct idea of the great value of this reagent in chemical analysis.

Sulphur forms acids by combination with oxygen, the most important of which is sulphuric acid, more popularly known as oil of vitriol. This substance may be called the Goliath of chemistry. No other substance known has such extended and diversified applications. There is scarcely a department of the arts that does not directly or indirectly involve its use.

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From iron founding to the manufacture of gingerbread ; in agriculture, in dyeing, in painting; indeed it would be very difficult to suggest a trade, occupation, or profession that does not depend more or less upon this most important substance. A friend asks over our shoulder, "Do you include lawyers and clergymen?" Most certainly we do. The paper upon which, and the ink with which lawyers and clergymen write, involve in their manufacture the use of sulphuric acid. Try something else. Hesitatingly—"boot-blacks." Out again. No blacking without the immediate or remote use of surphuric acid. Once more. "No, I give it up if the two extremes are not exempt. I'll none of the means."

The processes of manufacturing sulphuric acid are various. The fuming *Nordhausen* acid is distilled from the sulphate of iron, popularly known as green vitriol. The acid as thus obtained is in a state of the highest concentration it can attain in a fluid form. A proper redistillation of this acid produces a white fibrous mass of a silky appearance—solid sulphuric acid. This is called anhydrous sulphuric acid, the term *anhydrous* meaning without water. This is a most remarkable substance. Notwithstanding it is the most concentrated form in which the acid can be obtained, it has no acid properties. It is tough, waxy in consistence, and may be molded in the hands without danger. The concentrated liquid acid would soon reduce them to a state resembling pounded raw beefsteak. Anhydrous sulphuric acid, or concentrated liquid sulphuric acid is a very thirsty substance. Its fondness for water is only equaled by the disgust which that fluid seems to excite in some individuals of the human species. If it cannot get water elsewhere the acid will absorb it from the air. The anhydrous acid thus becomes liquid after a time, and the liquid gradually becomes weaker by exposure. It is therefore necessary to keep it from the air. Advantage is taken of this property to dry certain substances from which it is difficult to extract water. An open vessel containing acid is placed under a bell-glass, together with the substance to be dried. Being thus imprisoned together, the acid appropriates to itself all the moisture which the bell-glass incloses, and so without artificial heat a substance may be perfectly dried. Its attraction for water is so great that when poured into the latter it hisses like a red hot iron Strong acid exposed to the air will absorb water enough to double its weight. Mix four pints of this acid with one pint of water, and there will be considerably less than five pints of the mixture. This shows that the attraction of sulphuric acid for water is very strong indeed, sufficient to compress it more than a pressure of hundreds of tuns to each square inch of surface would do if applied to that fluid separately. Were we not right in calling it a Goliath?

We have already said that very large quantities of this substance are used. In England alone over one hundred thousand tuns are used annually, and its manufacture is conducted on a large scale in quite a different manner from the method above described for making the Nordhausen acid. That method is only practiced at Nordhausen, in Saxony, from which the acid takes its name. In order to understand the manufacture of sulphuric acid as it is conducted on a large scale, we must first know something of nitric acid. Nitric acid is composed of nitrogen and oxygen. These two gases mixed constitute the bulk of the atmosphere which we breathe, but when chemically combined in the proper proportions they form the nitric acid of chemistry—the aquafortis of the shops—an acid ranking next in strength and importance to sulphuric acid. The salt known as nitrate of soda is composed of nitric acid and soda. When sulphuric acid is poured upon nitrate of soda, the salt is decomposed, the sulphuric acid unites with the soda to form sulphate of soda, and the nitric acid becomes free. It is liberated in the form of a gas, and in this state it is used in making sulphuric acid. Remember its components—oxygen and nitrogen. When sulphur is burned in air the oxygen of the air combines with it, and forms sulphurous acid. This is also a gas, but like most other acid gases it is freely absorbed by water. One half more oxygen than it already contains would, if combined with it, change it to sulphuric acid. The process of making sulphuric acid can now be understood. First, sulphur is burned to form sulphurous acid; second, nitric acid is made to give a portion of its oxygen to transform the sulphurous acid into sulphuric acid; then the compound of nitrogen and oxygen which remains (deutoxide of nitrogen) seizes oxygen from the air (though not as much as was absorbed at first by the sulphurous fumes), becoming peroxide of nitrogen, only to be again robbed of its oxygen by the sulphurous acid, and so on *ad libitum*, the sulphuric acid, as fast as it is formed, combines with steam which is generated for that purpose, and is further absorbed by water. The engraving illustrates the apparatus by which this process is effected. A A are furnaces in which the sulphur is burned; in the current of heated gas is suspended an iron pot, B, containing nitrate of soda and oil of vitriol. The nitric acid vapors are thus intimately mingled with the sulphurous fumes, and pass through flues into the chamber, F F. This chamber is of lead, and is supported on strong timber framework. Water two or three inches in depth is placed upon the floor of the chamber, D D, to absorb the acid. Jets of steam are admitted from the boiler, E, through the pipes, C C C. An exit flue, G, permits the escape of nitrogen and nitric oxide, the only gases which can escape in a properly managed chamber. Some modifications of this process have been invented by Gay Lussac and others, by which saving is made in the amount of the salt used, but the general principle remains unchanged. The leaden chambers are frequently of enormous size, some of them being three hundred feet in length by twenty in width and twelve to fifteen feet in hight. The acid as drawn off from the chambers is too dilute for use in the arts. It is therefore concentrated in lead, glass, or platinum vessels, lead being used only for acids whose specific gravity is not required to be more than 1·720. This is the brown acid of commerce, and it usually contains many impurities. The concentrated acid of commerce is much stronger, having a specific gravity of 1·842, according to Bineau.

We have already noticed two acids, namely, sulphuric and sulphurous, formed by the union of sulphur and oxygen, as well as one formed by the union of sulphur and hydrogen—sulphureted hydrogen. There is still another oxacid, containing a small proportion of oxygen, called hyposulphurous acid. All of the oxacids combine with numerous bases to form salts extensively used in the arts. It would extend this article too much to specify these applications and describe them; they would fill volumes. But there is one class of these salts we must say something about, namely, the alums. There are several kinds of alums, of which the common alum of the shops is a type in its composition and its qualities. If you examine a crystal of alum you will see a white, partially transparent substance, which has a sweetish astringent characteristic taste. From such an examination you would hardly guess that it is composed of five different elements, yet such is the case. Two of these components are gases, oxygen and hydrogen; two of them are metals, aluminum and potassium; and the other is sulphur, which forms nearly one seventh of its entire weight. Throw your crystal upon a hot stove, and it will melt and froth and bubble, and finally become a dry, hard, white, and opaque mass. You have partly decomposed the salt by the process; it has lost $\frac{216}{474}$ of its former weight. What passed off was only water, which is composed of hydrogen and oxygen; what remains is composed of four elements, and sulphur now composes nearly one fourth the entire weight. In this state it is called anhydrous alum. The alums are in large demand in the art of dyeing, and the manufacture of the common alum is a large and growing industry. At some other time we may describe the process of making alum in full.

Take a lump of charcoal and a roll of brimstone and place them side by side. Nothing, to one unacquainted with the wonders of chemistry, would seem more improbable than that these hard and opaque substances could unite to form one of the clearest, most limpid and colorless fluids known. That is so, however, Charcoal is nearly pure carbon. Sulphur and carbon unite to form the bi-sulphide of carbon, a fluid so clear and of so high a refracting power that it has been used, inclosed in a triangular glass box, for the prism of that most wonderful instrument, the spectroscope, of which you have heard and read much, and will probably hear a great deal more ere another decade passes.

Take a piece of the ordinary rubber sold at the present time in the shops; put it on a fire shovel and hold it over the coals; in a short time it will soften and fry, and presently it will commence burning with a blue flame. It is sulphur which burns with the blue flame, a very large proportion of the substance called india-rubber being sulphur. By a peculiar process this rubber can be rendered hard as horn, and in this state it is now used for combs, brush and knife handles, and even for the plates upon which dentists fix artificial teeth.

Sulphur is also largely used for bleaching, its fumes while burning producing that effect. Straw goods are thus whitened.

We might fill this paper with the enumeration of the uses of sulphur and its compounds. Any chemist will tell you that we have only skimmed over the surface of the subject. We have omitted to mention many of the properties of sulphur, some of which have given rise to much speculation. Sulphur is found plentifully distributed in the crust of the earth, but is most abundant in volcanic regions, one of the principal sources being the Island of Sicily, where it is found in an uncombined state. There is perhaps no other substance, unless it be iron, upon which the arts and refinements of civilization are more dependent. The world could infinitely better afford to lose all of the precious metals and precious stones, rather than be deprived of its sulphur deposits. The thought may serve to render the substance more palatable, when your physician prescribes it in the future.

Who Ate Roger Williams?

Steele's "Fourteen Weeks in Chemistry," says:

"The truth that animal matter passes from the animal back to the vegetable, and from the vegetable to the animal kingdom again, received a curious illustration not long since.

"For the purpose of erecting a suitable monument in memory of Roger Williams, the founder of Rhode Island, his private burying ground was searched for the graves of himself and wife. It was found that everything had passed into oblivion. The shape of the coffins could only be traced by a black line of carbonaceous matter. The rusting hinges and nails, and a round wooden knot, alone remained in one grave; while a single lock of braided hair was found in the other. Near the grave stood an apple tree. This had sent down two main roots into the very presence of the confined dead. The larger root, pushing its way to the precise spot occupied by the skull of Roger Williams, had made a turn as if passing around it, and followed the direction of the backbone to the hips. Here it divided into two branches, sending one along each leg to the heels, when both turned upward to the toes. One of these roots formed a slight crook at the knee, which made the whole bear a striking resemblance to the human form. There were the graves, but their occupants had disappeared; the bones even had vanished. There stood the thief—the guilty apple tree—caught in the very act of robbery. The spoliation was complete. The organic matter, the flesh, the bones of Roger Williams had passed into an apple tree. The elements had been absorbed by the roots, transmuted into woody fiber, which could now be burned as fuel, or carved into ornaments, and bloomed into fragrant blossoms, which delighted the eye of the passer-by, and scattered the sweetest perfume of spring; more than that—has been converted into luscious fruit, which, from year to year, had been gathered and eaten. How pertinent, then, is the question, 'Who ate Roger Williams?'"

MANUFACTURING, MINING, AND RAILROAD ITEMS.

The Agawam Nail Works, Mass., resumed operations on the 12th inst.

The expense for labor upon the Holyoke dam, in Massachusetts, is $800 per day.

The consumption of flour in the city of Boston is said to be one million barrels per annum.

Europe is said to own $983,400,000 of American Railroad, State, and Government bonds.

A firm at East Boston use six tuns of iron per day in the manufacture of telegraph wire.

It is stated that preparations are on foot to re-open the Schenectady and Athens route of the N. Y. Central Railroad.

Middletown, Conn., has voted $60,000 more stock in the Air Line Railroad. This brings its entire subscription up to $260,000.

There are sixty thousand people engaged in watchmaking in Switzerland They turn out over a million of watches each year.

The refinery of Messrs. Rockefeller, Andrews & Flagler, at Cleveland, Ohio, produces 1,100 barrels of refined petroleum per day.

It is estimated that by 1870 there will be 50 000 miles of railway completed in the United States, enough to twice girdle the earth.

The iron bridge over the Housatonic river at Great Barrington, Mass., is completed. It is an elegant and expensive structure.

There are at present 557 woolen mills in Ohio, Michigan, Illinois, Indiana Wisconsin, Iowa, and Minnesota, with a capital of $5,500 000.

The Directors of the Chicago and Northwestern Railroad have fully determined to resume construction upon the Winona and St. Peter line.

The Chicago, Burlington, and Quincy Railroad Company is building a new freight depot at Quincy, to accommodate its increasing business.

A single manufactory in Maine has this season packed 1,600,000 cans of green corn, and during the spring and fall has canned nearly 600,000 lobsters.

The Bay City Iron Company have begun to build works at Bay City, Mich., in which they will carry on the foundery and machine business on an extensive scale.

The town of Farmington having refused to loan its credit to the Connecticut Western Railroad the Company have changed their route and left Farmington out in the cold.

The highest mine in the world is the Potosi silver mine, 11,375 feet above the level of the sea. The deepest is a salt mine in Westphalia, 2,050 feet below the surface of the ocean.

A beet root sugar manufactory is about to be established in Buena Vista County, Iowa. The machinery is to come from France at a cost of $100,000. Five thousand acres have been purchased upon which to grow the beets.

A. M. Wheeler, of Halifax, has cut a hemlock tree from which was made twelve thousand shingles, all clear, first rate shingles, leaving timber enough for five or six hundred feet of boards, and lots of good wood for fire, beside three-fourths of a cord of bark.

A watchman at the car shop in St. Albans, went to a drawer in search of a pipe the other night. Not finding it he lighted a match and fire from it dropped into the drawer which contained about a quarter of a pound of gunpowder. The consequence was an explosion, and the man's face, hands, and arms were badly burned.

Recent American and Foreign Patents.

Under this heading we shall publish weekly notes of some of the more prominent home and foreign patents.

VARNISH.—Isaac Ranney, Delaware, Ohio.—This invention has for its object the production of a very lustrous, durable, and economical varnish for general use.

CARRIAGE STEP.—George Panchot, Hastings, Minn.—The object of this invention is to provide a neat, simple, and cheap attachable and removable step for wagons and other carriages.

BUGGY-TOP FASTENING.—D. S. Early, Hummelstown, Pa.—The object of this invention is to provide a simple and cheap device for securely fastening the top of a buggy to the seat, which, by simply throwing down or up a hinge joint in the fastening rod, will instantaneously lock the top to the seat or loose it therefrom.

CAR COUPLING.—J. P. Freeman, Dalton, Whitfield, Ga.—This invention has for its object the construction of a simple and efficient coupling for railroad cars, which shall combine with the old-fashioned method of coupling by hand, an automatic coupling of new and greatly improved construction and operation.

HARVESTER.—Isaac H. Palmer, Lodi, Wis.—In this invention, the platform, upon which the grain is delivered by the reel, is placed directly behind the cutter, and is tilted at every revolution of the reel or of one of the draft wheels, so as to deliver the sheaf upon the ground and set the platform again to receive another sheaf.

FENCE.—Obadiah Love, Saxenburgh, Pa.—The object of this invention is to obtain a neat, light, cheap, and portable wooden fence, which is capable of being easily converted into a temporary shelter for sheep and other animals. Simply doubling the panels and interlocking their ends is all that is required to hold them together.

MANUFACTURE OF SHOT.—Wm. Glasgow, Jr., and John G. Wood, St. Louis, Mo.—The object of this invention is to do away with the high lofty towers now used in the manufacture of shot, which is accomplished by dropping the lead through a denser medium than air, such as mercury, glycerin, sirup, oils, etc., the temperature and density of which will be regulated according to the size of shot to be made.

MACHINE FOR DRESSING MILLSTONES.—Wm. Bold, Sheboygan Falls, Wis.—The object of this invention is to accomplish the cutting or dressing of the 'lands," so called, of millstones, in an easy and expeditious manner.

CORN HARVESTER.—John D. Hampshire, Paper Mills Post Office, Md.—This invention relates to a new and improved machine for harvesting maize or Indian corn.

RAILROAD SWITCH.—Hiram Beckwith, Grass Lake, Mich.—This invention relates to an improvement in the method of operating railroad switches, and it consists in the method of securing the switch lever and holding it in place.

KING-BOLT AND WHIFFLETREE PLATE FOR WHEELED VEHICLES.—Levi Adams, Amherst, Mass.—This invention relates to a new and improved kingbolt and whiffletree plate for wheel vehicles, whereby several advantages are obtained.

PUMP VALVE.—J. A. Nichols, Paterson, N. J.—This invention relates to an improvement in the method of constructing pump valves, being more particularly designed for steam fire engines, but which may be applied to other pumping engines.

LUBRICATING DEVICE FOR STEAM CYLINDERS.—George Girty, Rainier, Oregon.—This invention relates to a new and improved device for lubricating steam cylinders, and it consists of a novel arrangement of valves, oil chamber, and lever.

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AUTOMATIC CAR COUPLING.—Willard E. Bush, Damacus, Pa.—This invention consists in attaching spring catches to the coupling pin, to prevent its displacement by the motion of the cars, and in the form of the ends of the escaping link, and in the provision made for holding the link in place.

APPARATUS FOR BOILING EGGS.—Ira Dimock, Florence, Mass.—This invention consists, in general terms, of a chamber forming part of a stand or basket for holding eggs, to be immersed in boiling water. The chamber contains water, which becoming expanded by heat, actuates a rod communicating with bell mechanism, whereby the bell is sounded when the water has acquired a certain predetermined temperature. The chamber is inclosed by another, and the separating space between the two chambers contains air or other media to retard the transmission of heat to the water within the inner chamber, and thus allow sufficient time for the boiling process.

WEEDING AND SCUFFLING HOE.—Lewis King, Oriskany Falls, N. Y.—This invention consists in forming the hoe and shank in one continuous piece, the shank being bent and flattened to form a blade which, from its position at right angles to the handle and parallel with the ground, as ordinarily held, operates in a superior manner as a scuffling hoe.

HORSE RAKE—Nicholas Selby, Flora, Ill.—This invention is designed as an improvement upon a rake patented by J. C. and E. D. Turner, of Bridgeport, Ill., in August of 1867. The improvement consists in providing a balanced or sulky frame, which is pivoted on two draft wheels and provided with a hinged frame which supports the revolving rake.

WASHING MACHINE.—G. A. Dabney, San José, Cal.—This invention has for its object to furnish an improved machine for washing clothes, which shall be simple in construction and effective in operation, doing its work rapidly and thoroughly.

WEATHER BOARD GAGE.—Worden E. Stoddard, Fort Edward, N. Y.—This invention has for its object to improve the construction of the weather board gage patented by the same inventor May 17, 1859, and numbered 24,066.

BAG TIE.—J. W. Bates, Glencoe, Minn.—This invention has for its object to furnish an improved device for tying bags, sacks, sheaves of grain, laths, pickets, and other such articles put up in bundles, which shall be simple in construction, inexpensive, easily and quickly attached and detached, and which will hold the bag or bundle securely tied.

BOOK FOR BOOKKEEPING.—John H. Gleim, St. Louis, Mo.—This invention has for its object to diminish the number of books required in conducting a business, whether wholesale, retail, or commission, and at the same time so combining and arranging the columns of the journal as to require less labor in making the entries, and generally simplifying the record of the business.

MACHINE FOR WEIGHING AND TALLYING GRAIN.—F. S. McWhorter, St. George's, Del.—This invention relates to the weighing and tallying of grain automatically. It consists in general terms of a belt of elevating buckets operating within a box or casing, whereby the grain is elevated and passed over into a vertical chute in which is arranged a sleeve which is provided with a device for choking the same to discontinue the flour or grain through it. The device discharges the grain into a rack held on a sack holder, which being connected with a steelyard properly weighted, the movement of the steelyard causes the chocking of the sleeve by being connected with the chocking device. Other devices perfect the operation of the whole, rendering it a simple and effective device, which is applicable to the discharge of grain from or into box cars, canal boats, vessels, and grain lofts.

CHAIR.—H. Buchter, Louisville, Ky.—This invention has for its object to furnish an improvement in the mode of securing the ends of the canes in forming the seats of cane seated chairs, by means of which the canes may be placed close together, so as to form a close seat, while at the same time the seats will last much longer and may be much more quickly formed than when made in the ordinary manner.

WROUGHT IRON AND STEEL COLUMNS.—George Walters and Thomas Shaffer, Phœnixville, Pa.—This invention has for its object to furnish an improved iron or steel column or shaft for use in the construction of buildings, bridges, piers, truss work, compression chords, etc., which shall be simple in construction, strong, and solid, and which may be manufactured at a less expense than columns or shafts constructed in the usual manner.

CORN SHELLING MACHINE.—Joshua S. Rackham, Waterport, N. Y.—This invention consists in a vertical cylindrical shell made in sections, which are divided into segments hinged at one end, the other being allowed to swing outwardly against springs, which constantly tend to maintain them in a concentric position. A vertical cylinder is provided within the said shell, on an axis, and provided with teeth which act in conjunction with corresponding teeth upon the interior of the shell. The swinging segmental sections are designed to yield to the different sizes of the ears to be shelled. A screen and fan blower are also provided for cleaning the corn as it passes through the machine.

COLLAR AND CRAVAT FASTENER.—Emanuel Rau, New York city.—This invention relates to a new instrument for connecting a cravat, and the ends of a paper or other collar with the neckband of a shirt. The invention consists in the use of a pin, with a head on one end, and a projecting breastpin, all combined in such manner that the aforesaid result can most readily be obtained.

MOWING AND REAPING MACHINE.—H. Howe, Oneota, N. Y.—This invention consists in hanging on each end of the counter shaft a loose pinion, each pinion being connected with the counter shaft by means of a ratchet spring clutch. The pinion on the left hand side is smaller than the other, and it will, as it meshes into internal gear of the left hand driving wheel carry the counter shaft round while the other pinion will remain idle, not being able to revolve with the counter shaft. The strain of the whole machine is thus thrown upon the left hand side and consequently taken away from the cutting side of the machine.

METHOD FOR DESTROYING CARTERPILLARS.—H. A. Graef, Brooklyn, N. Y.—The object of this invention is to devise a means for destroying and exterminating the caterpillars, and more particularly the measure worms (*ennomos subs gnaria*), by which a great number of trees and other plants are injured. The invention consists in the application of diluted chloride of lime, which, when applied to these insects, will instantly kill them by merely coming in contact with their skins.

LAMP BURNER.—W. W. Jacobs, Hagerstown, Md.—This invention relates to an improvement on a lamp burner, for which letters patent were granted and dated Nov. 5, 1867. This burner is intended for burning oil without a chimney, by generating gas by the heat of the tube.

METHOD OF GENERATING STEAM.—Frank M. Horning, East Pike, N. Y.—The object of this invention is to utilize all, or nearly all, the heat produced from fuel in the generation of steam, and it consists in forcing the gaseous products of combustion, separated from the ashes, into and through the water in the boiler.

SOFA BEDSTEAD.—B. L. Southack, New York city.—This invention relates to a new sofa bedstead, which is provided with a folding back, hinged to a sliding seat, the back, when turned up, resting against the back edge of the arm rests or head boards of the same, so as to be in a proper position. The invention consists in such an arrangement of all parts, that the folding sofa back, which is hinged to the sliding seat, and which forms, together with the seat, the bed bottom will, when turned up, bear or rest against the back edge of the arm supports or headboards, to which it may be secured.

PICK AXES.—Morgan Gale, San Antonio, Mexico.—This invention has for its object to improve the construction of pick axes, so as to make them stronger, more durable, and less likely to become loose upon the handle than when constructed in the ordinary manner.

F SAWING MACHINE.—F. M. Schaeffer, Blooming Grove, Kansas.—This invention consists of an improved arrangement of guides for the saw; also, an improved means for adjusting the saw to work either in a horizontal or vertical plane; also, an improved means for holding a log while being sawed to prevent the same from rolling, and also, in an improved means for supporting the block which is being sawed off.

HEAT RADIATOR.—George M. Woodward, New York city.—The object of this invention is to provide a heat radiator of that class in which steam is introduced at the bottom, said steam rising to the top of the heater and descending, so as to escape again from the lower part of the apparatus. The steam, during its passage through the apparatus, heats the metallic or other sides of the same, which heat is radiated into the room or apartment, in which the device is set up.

CORN PLANTER.—D. F. Taft, New Bedford, Mass.—This invention relates to a new seed planter, which is provided with a flexible or jointed spout, so that the marking and covering shovels attached to the lower end of the spout, can be easily raised out of the ground, whenever obstructions are in their way, or when the machine is not to be put in operation. The invention also consists in the use of a new device for operating the slide in the seed box, and for throwing the same out of gear.

SAFETY VALVE FOR STEAM BOILERS.—Wm. R. Malone, Mason city. W. Va.—The object of this invention is to provide a means for automatically checking the increase of steam in the boilers, when the desired amount of pressure has been raised, and it consists in providing means for conveying the steam or water which escapes through the safety valve, and the fire for checking it, whereby the increase of steam is checked. It also consists in an improved method of connecting the safety valve to the boiler.

COUNTER SINKS.—P. A. Whitney, Woodstock, Vt.—This invention relates to an improvement in counter sinks or reamers for metal, and consists in the arrangement within a hollow stock of the cutters, which is made of a piece of flat steel between two clamping nose pieces, through which it is fed downward by a feeding screw as it wears away.

BIT STOCK.—Benjamin Darling, Bridgewater, Mass.—The object of this invention is to construct a bitstock so that the shank of the bit or boring auger may be firmly held without the use of springs or screw nuts, and so that the bits or augers may be used without cutting their shanks or filing them in any manner.

BEE HOUSE.—Charles Decker, New Michigan, Ill.—This invention relates to a new and improved bee house, and it consists in the means employed for suspending the comb frames in the house.

MACHINE FOR BENDING OR FOLDING SHEET METAL.—A. W. Whitney and P. A. Whitney, Woodstock, Vt.—This invention relates to a new and improved machine for bending or folding sheet metal designs for the use of tinsmiths and other artisans in sheet metal.

WHEELS FOR VEHICLES.—R. J. Bowman, Mansfield, La.—This invention relates to a new and useful improvement in the construction of metallic wheels for vehicles, whereby strength and lightness are obtained with a requisite amount of elasticity to avoid the transmission of jars and concussions to the body of the vehicle and the consequent wear and tear attending the same.

SULKY CULTIVATOR AND SEEDING MACHINE.—Frank A. Hill, Marysville, Cal.—This invention relates to a new and improved sulky cultivator and seeding machine, and it consists in a novel construction and arrangement of parts whereby the rider and driver has perfect control over the implement, both as regards the sowing of the seed and the adjustment of the shares or teeth.

ROTARY CULTIVATOR AND SEEDING MACHINE.—Stephen Mahurin, Clayton, Ill.—This invention relates to a new and improved device for cultivating the earth and sowing seed, and it consists of one or more shafts provided with teeth and having a rotary motion communicated to them by the forward movement of the machine.

BUTTON HOLE CUTTER.—A. J. Lytle, West Union, Ohio.—This invention relates to a new and improved method of constructing button hole cutters, whereby the same are more simple in their construction and more effective in their operation.

SAW FILING MACHINE.—D. H. Iseminger, McLean, Ill.—The object of this invention is to provide a simple and effective and conveniently operated machine for filing the teeth of straight saws. It consists of the combination of saw clamps with a guide rod and file stock, the file stock being provided with certain swivel appliances to enable the file to be pointed and held parallel to itself at each successive tooth of the same. The machine is provided with other devices perfecting its operation.

ATTACHMENT FOR SODA FOUNTAINS.—J. C. Wharton, Nashville, Tenn.—The object of this invention is to provide an attachment for soda water fountains whereby a jet of water will be made to play upon each of the nozzles of the sirup font cocks (which form a part of the fountain apparatus as generally constructed) and cleanse the said nozzles from any adherent drops of sirup thus preventing the obstruction of the same by the saccharine matter of the sirups collecting thereon.

HAND SPLINT KNIFE.—Samuel Friend, and John McCollom, Decatur, Ill. This invention relates to an improvement in a knife for splitting or riving splints or splits from timber for making baskets and other purposes, and consists in a tool resembling a spoke shave in form and is worked by one man drawing it towards him without a carriage, instead of by pushing with several men in the manner of the splint machines in common use.

HOSE AND MACHINERY FOR MAKING IT.—Geo. Coles, London, and James Archibald Jacques, and Jno. Americus Fanshaw, Tottenham, England.—This invention consists in forming flexible hose by plaiting or braiding the same around a core formed of rope or other suitable material and arranged so as to be withdrawn after the hose has been formed. It also consists in improvements in machinery for braiding the same.

BRAKE FOR RAILWAY CARS.—Martin H. Rumpf, Paris, France.—This brake consists in a lever with a block adherent thereto, suspended from an axis eccentric to the axis of the wheel and arranged so as to allow the block to bear on the face of the wheels together with other parts accessible thereto.

The principle of the system lies in the blocks being arranged in their dropping against the circumference of the wheels, to describe an arc of a circle, which intersects more or less obliquely the said circumference, so as to produce, of themselves, the blockage by means of the rotation of the wheels.

Answers to Correspondents.

CORRESPONDENTS who expect to receive answers to their letters must, in all cases, sign their names. We have a right to know those who seek information from us; besides, as sometimes happens, we may prefer to address the correspondent by mail.

SPECIAL NOTE.—This column is designed for the general interest and instruction of our readers, not for gratuitous replies to questions of a purely business or personal nature. We will publish such inquiries, however, when paid for as advertisemets at $1 00 a line, under the head of "Business and Personal."

☞ *All reference to back numbers should be by volume and page.*

J. C. N., of Minn.—"Will you inform me of the length of a rifle barrel having the greatest range, and also why a breech loading gun has a greater range than a muzzle loading one?" We cannot give you the absolute length of a rifle barrel that projects a ball the furtherest, as there must be taken into consideration the weight and form of bullet,, the the amount of powder used, and the resistance offered to erratic movement by the thickness of the walls of the tube or barrel. On all and each of these points experts disagree, not however, on general principles, but on the difference of their experience. It is certain, however, that the barrel and its rifling are intended to give direction to the bullet and to confine the power imparted by the liberation of the gasses, until this direction is assured. When these are assured the benefit of the barrel's length ceases. In common use it is found that a barrel of twenty inches is as good as one of thirty-two inches in length. We have seen the ordinary Colt's pistol, navy size, barrel eight inches in length, project a ball accurately a distance of three hundred yards. Would a barrel of thirty-two inches do better? In regard to your second question, the breech loading gun has a greater range merely because there is less "windage," as the ball has not been loosened by being forced down the grooves it must again traverse.

J. P. C., of Ohio.—No step or foot bearing of metal is equal to good oak or rock maple for a turbine wheel. These woods are used as steps for turbines which develope a power six hundred or seven hundred horses. Wood bearings are also used for the stern supports of propeller screws.

P. P. C., of R. I.—"What constitutes the difference in the quality of cast steel, the original materials or the after working?" Both, but largely the latter. We have three specimens of cast steel on our table now, made by the American Tool Steel Company in Brooklyn, N. Y., each broken from the same bar and from the same end of the bar, yet so differing in appearance of fracture that one would be impelled, from the evidence of his eyesight, to declare they were three different grades of steel. These differences in texture, not in appearance only, but in fact, were brought about simply by the degrees of heat to which the pieces were subjected, no hammering being attempted. Now if such marked variations in the quality of steel from the same bar may be obtained simply by heating and hardening in clean water, why should not still greater differences and qualities be produced by judicious forging? By this means a course grained steel may be wrought into a delicate spring or a fine tool, having a good cutting edge. Too much, however, in this case is left to the skill of the forger, and it is safer to use the best material if the best results are desired.

J. A., of Mass.—Acids act not only upon the edge of steel blades, but upon their quality. We know the reason for the first but we cannot explain the other phenomenon. The acid of fruits attacks vigorously the steel, especially when presented in a thin edge—almost all surface—and rapidly oxidizes it. But why a blade of steel long exposed to the action of acids refuses to receive the hardening attempted by the forger's hammer and bath we cannot say. The fact is one of the uncracked nuts in mechanics, but it is, nevertheless a fact.

W. A. K., of Mass.—Cast iron is capable of receiving a cutting edge. The only reason why it is not used instead of cast steel, much more costly, is that it will not retain that edge. Still, we have used a razor blade made of cast iron and found it shaved as cleanly and perfectly as one of fine steel. Cast iron hatchets are now manufactured and work well—for a time. We cannot, however, recommend cast iron as a substitute for steel for edge tools.

M. A. R., of R. I.—The temper of tools used in cutting wood can easily be destroyed by being driven too fast. The fact that the wood is green or wet does not affect the result. Green wood will as soon deteriorate the quality of a cutter, whether bit, chisel, or gouge as the hardest quality of kiln dried timber.

J., of ——— an anonymous correspondent, such as we seldom notice, asks if steam is inflammable. The question may be of some general value, and we answer that it has the power of inflaming substances capable of being ignited by heat. It is not the medium but the temperature that produces fire or inflammability.

P. C. W., of Mass.—Carbonates of lime are acted upon by acids, therefore keep all acidulated liquids and fruits from your marble table Preserve the varnished surfaces of your furniture from defacement by not allowing alcohol in any form to come in contact with them. The reason is obvious.

Business and Personal.

The charge for insertion under this head is one dollar a line.

Wanted to know where to obtain a reliable liquid meter for registering petroleum. Address H. W. Faucett, Petroleum Center, Pa.

A. H. Scott, Concord, N. C., has a valuable new patent for sale, and wishes to communicate with dealers in patents in the several States.

New pictures for the zoetrope. Series No 5, sold by booksellers, or sent for $1, by Milton Bradley & Co., Springfield, Mass.

Paper mill wanted. Address T. S. V., Roslyn, L. I.

The best lathe for irregular forms, now exhibiting at Maryland Institute. Address, for particulars, during fair. A. R. Stewart, Maryland Institute, Baltimore, Md.

An interest in a valuable agricultural improvement is offered to any one who will furnish means to sell the right. Address "R.," 231 F st., Washington, D. C.

To manufacturers.—Fine machinery of every kind designed and built by S. W. Gardiner, No. 6 Alling st., Newark, N. J.

Parties about to buy steam boilers should examine Root's wrought iron sectional safety boiler at 95 and 97 Liberty st., New York. See advertisement.

Inventors and owners of small patents send circulars to post-office box 111, Peekskill, N. Y.

The pew hat rack.—County rights for sale. Send for circular to E. S. Blake, Pittsburgh, Pa.

Peck's patent drop press. For circulars, address the sole manufacturers, Milo Peck & Co., New Haven, Conn.

American Watchmaker and Jeweler. By J. Parish Stelle. Jesse Haney & Co., 119 Nassau st., New York. Price 25 cents.

Millwrights can make favorable arrangements for sale of best water wheel in use. Address Peekskill Man'f't Co., Peekskill, N. Y

For sale—barrel machinery, nearly new, for whiskey and coal oil barrels. Address postoffice box 390, Cincinnati, Ohio.

For Blanchard's spoke lathes, address Exeter Machine Works, Exeter, N. H.

Portable pumping machinery to rent, of any capacity desired, and pass sand and gravel without injury. Wm. D. Andrews & Brother, 414 Water st., New York.

Adams' air cylinder graining machines for painters and all manufacturers of painted ware. Machine guaranteed. Send stamp for circular to Heath, Smith & Co., 400 West 15th st.

For descriptive circular of the best grate bar in use, address Hutchinson & Laurence, No. 8 Dey st., New York.

Manufacturers wanted to build Ball's Ohio reapers and mowers. For terms and territory apply to J. A. Saxton, Canton, Ohio.

N. C. Stiles' pat. punching and drop presses, Middletown, Ct.

For sale—the patent right, in Great Britain, for perforated saws. The manufacture of these saws is now firmly established in the United States, and they are rapidly taking the place of all other solid saws. Apply to J. E. Emerson, Trenton, N. J.

Prang's American chromos for sale at all respectable art stores. Catalogues mailed free by L. Prang & Co., Boston.

For breech-loading shot guns, address C. Parker, Meriden, Ct.

Winans' anti-incrustation powder, 11 Wall st., N. Y. 20,000 references. No foaming. No injury. 12 years in use. Imitations plenty.

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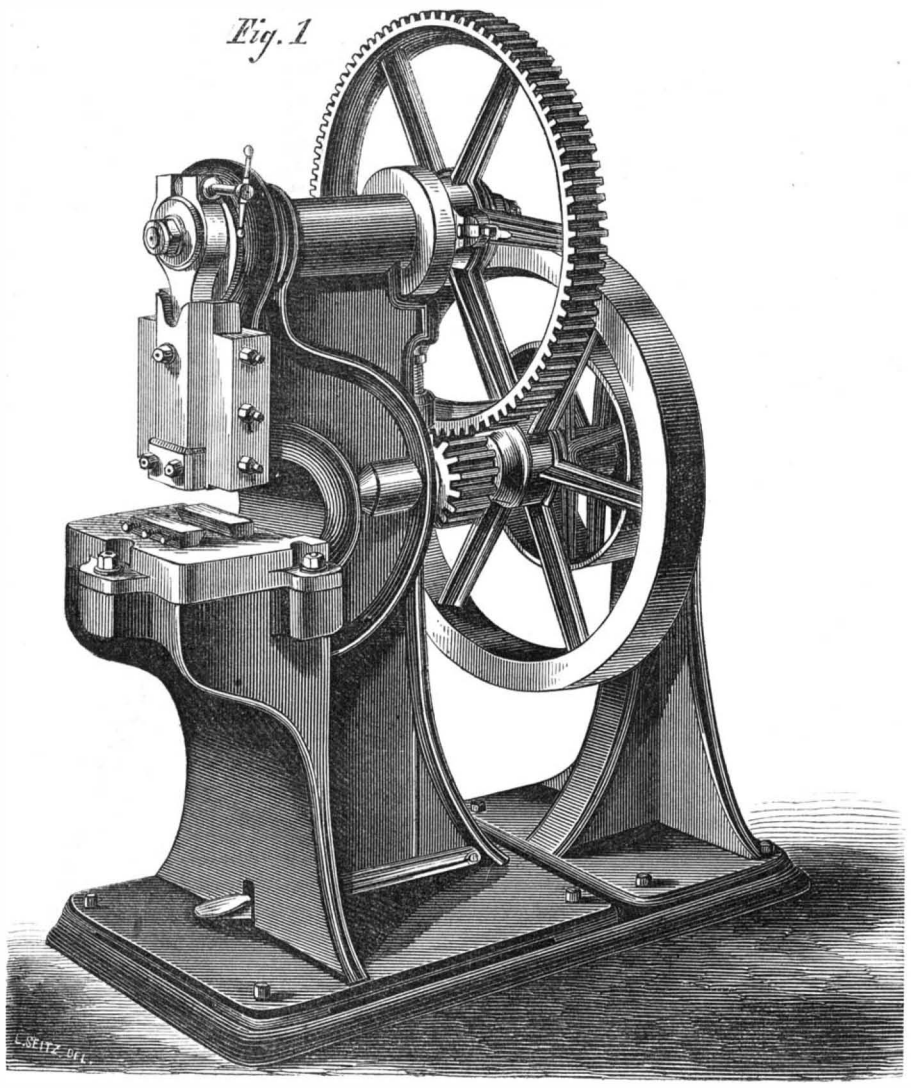
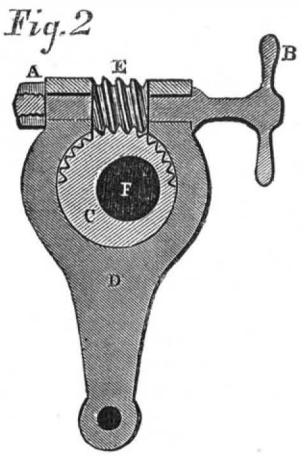
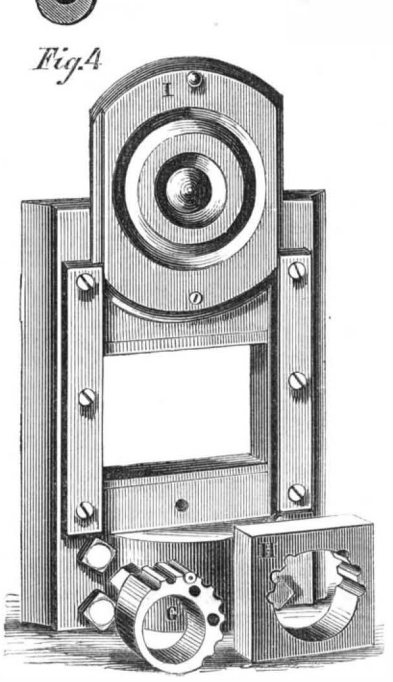
Improvement in Power Punching Presses.

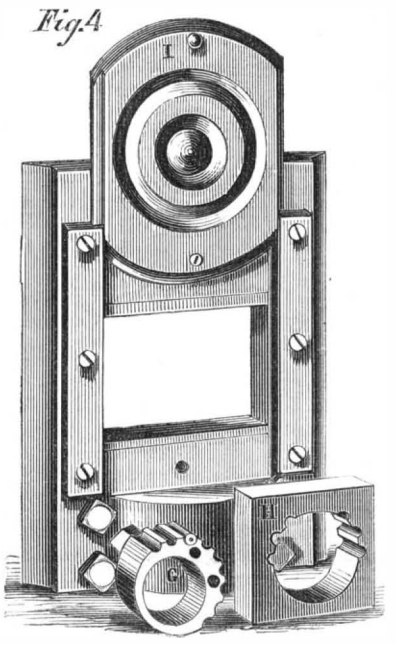
Twenty years ago the punching press existed only in a very crude form, and was used but seldom, and then only for a special class of work. Now it is an elaborate and workmanlike machine, one of the most valuable tools the machinist uses, and is applied to many purposes. Small forgings are finished by it, and their substance condensed and surfaces smoothed, while its power of rapidly cutting out and fashioning blanks of almost all forms, has scarcely a limit.

Fig. 1 is a perspective view of a powerful back geared machine. The pitman on the front connects at one end with the sliding block, or punch stock, and at the other end with a toothed eccentric on the main shaft, the teeth being cut around a portion of its periphery. These teeth engage with a worm turned by a hand lever, the device being seen in section in Fig. 2. By this means the stroke of the punch may be graduated, and governed to the minutest fraction of an inch.

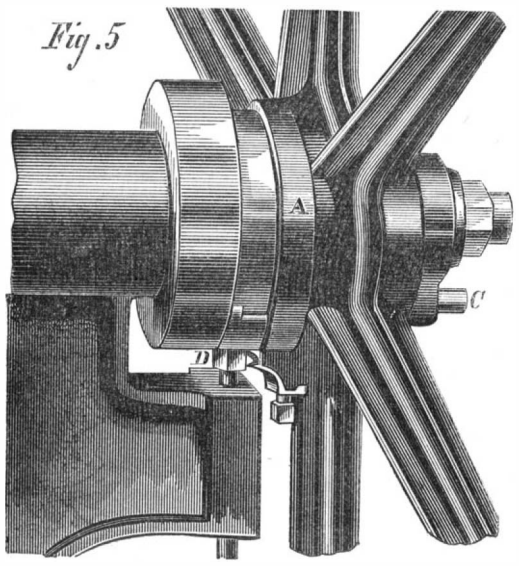








STILES' PATENT IMPROVED PUNCHING PRESS.

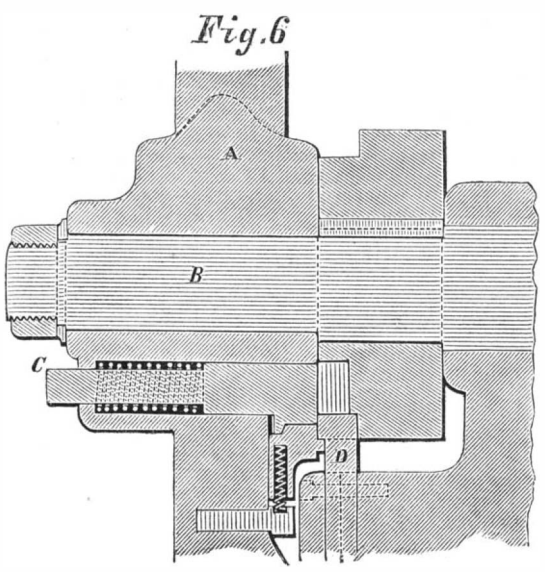


Figs. 3 and 4 represent the Stiles' patented device for graduating the stroke of ordinary crank presses, by which means the stroke may be graduated to the sixty-fourth part of an inch. The eccentric marked G has a series of semicircular holes on its periphery, engaging, when in position with similar holes in the block, H, the eccentric being moved on the shaft by means of a pronged wrench fitting the holes seen on its face, and being held in connection with the block by a pin fitting the two semicircular engaging apertures. In Fig. 3 the eccentric is seen seated in the block, and in Fig. 4 both the eccentric and block are seen removed. The face plate, or cover, I, in either case is raised.

This device is the principle, and one of its adaptations to the adjustment of the stroke of the punch, the toothed eccentric, however, in Fig. 2 is an improvement on the original design, which was described and illustrated on page 305, Vol. X., current series of Scientific American.

In Fig. 2, A is a tightening nut on the end of the worm shaft, the shaft being worked by the handle, B, by which the eccentric, C, is turned on the shaft, F, thus governing the stroke of the pitman, D, and the consequent throw of the punch stock. E is the worm meshing with the teeth on the eccentric.

Fig. 5 is a perspective view of the parts of the machine containing the stop or lock motion, and Fig 6 is a vertical longitudinal section of the same. In both figures the same letters of reference are used. A is the hub of the driving wheel, turning free on the shaft, B, and locked or keyed to the shaft by the spring bolt, C, which is held by means of the vertical catch, D, the top or head of which is crescent shaped, its inner surface fitting the shaft, and its reduced end edge allowing the end of bolt, C, to pass between it and the shaft or outside, as the position of the catch, D, may determine, which position is governed by the action of the treadle seen in Fig. 1, and operated by the foot of the workman. Spiral springs on bolt, C, and catch, D, assist in the operation of the stop motion. So long as the workman presses upon the treadle, the bolt keeps the driving wheel



in connection with the shaft, and the punch is operated, but when he releases the pressure of his foot the catch, D, is forced upward by its spring, and the bolt or key, C, engages with the other surface of the head of D, and releases the key bolt, leaving the driving wheel to revolve freely on its shaft without imparting motion to the punch. The relation of the punch and the key bolt is arranged so that the punch must stop always at the highest point of its stroke, so there can be no chance of cutting off fingers by the continued action of the press after the treadle and its connections have been put in operation.

This machine and its parts are the subject of several patents, procured through the Scientific American Patent Agency, dated January 26, 1864; January 30, 1866; re-issued December 26, 1865, and April 2, 1867. Manufactured by N. C. Stiles, who may be addressed at Middletown, Conn.

Alaskan and British Columbian birds are said to be numerous in variety and most beautiful in plumage. Two thousand specimens are on their way to this country for museums.

Singular Preservation.

The London *Herald* tells the following singular and touching story:

Not many years since, certain miners, working far underground, came upon the body of a poor fellow who had perished in the suffocating pit forty years before.

Some chemical agent to which the body had been subjected—an agent prepared in the laboratory of nature—had effectually arrested the progress of decay. They brought it up to the surface, and for a while, till it crumbled away through exposure to the atmosphere, it lay there the image of a fine sturdy young man. No convulsion had passed over the face in death—the features were tranquil; the hair was black as jet. No one recognised the face—a generation had grown up since the day on which the miner went down his shaft for the last time. But a tottering old woman, who had hurried from her cottage at hearing the news, came up, and she knew again the face which through all these years she had never quite forgotten. The poor miner was to have been her husband on the day after that on which he died. They were rough people, of course, who were looking on; a liberal education and refined feelings are not deemed essential to the man whose work is to get up coals or even tin; but there were no dry eyes there when the gray-headed old pilgrim cast herself upon the youthful corpse, and poured into its deaf ear many words of endearment unused for forty years. It was a touching contrast; the one so old, the other so young. They had both been young those long years ago; but time had gone on with the living, and stood still with the dead.

Workingmen as Students.

Professor Tyndall, who occupies the chair of natural philosophy at the Royal School of Mines in London, reports some striking results from the delivery of evening lectures, a plan which was set on foot a few years ago, partly with a view to meet, in some degree, the wants of schoolmasters. On alternate evenings the lectures are to workingmen, and these he says are far more attentive than the others. "I have purposely," he observes, "looked round the filled benches in search of a yawn. I never once saw it among these workingmen." The professor further states: "I often receive letters which are perfectly touching, in the name of twenty workmen or thirty workmen, in such and such a factory, expressing their intense disappointment at not being able to get tickets for the lectures." As soon as an advertisement appears, stating that 600 tickets will be disposed of at a certain time, the demand is such that tickets are sold as fast as they can be given out. Those who thus attend are described as being "for the most part, *bonâ fide* workingmen; hard-handed, earnest people, who have no time to devote to study save the time which they take at night."

The West Side Elevated Railway.

The recent meeting of the directors of the West Side Elevated Railway Co., resulted in a very favorable exhibit of the future prospects of the road. Proposals for the iron necessary for further construction were received, and some large contracts completed. The reports of surveys for the fixing of the remainder of the line were submitted, and referred to the chief engineer with power. The section already completed will be put in operation about the first of November; and all legal difficulties having been removed, the company will proceed to raise money as rapidly as possible for the completion of the road.

Electrical Freaks.—A tinsmith in Reno, Cal., during a recent thunder storm noticed that a lad in his employ seemed to be afraid of his tools. Upon questioning the boy, he complained that something strange was the matter with them. The tinsmith upon attempting to take up the large scissors which the youngster had dropped, received a shock that nearly prostrated him. Immediately after little balls of fire began hopping about over bits of iron, and making finally a a united assault upon the coal furnace, whereupon the "boss" and his apprentice wisely and speedily vacated the premises until the subsidence of the storm.

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NEW YORK, WEDNESDAY, NOVEMBER 4, 1868.

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TO INVENTORS.

Commissioner Foote, after a few weeks' rest, has returned to his duties, and inventors may look for a more speedy disposition of their cases. Serious, and well-grounded complaints are coming to us concerning the delay in the examination of cases. The Commissioner is fully advised of the fact, and assures us of his determination to have applications examined, and disposed of without unnecessary delay.

Now is a favorable time to enter applications, and inventors will find the SCIENTIFIC AMERICAN AGENCY ready to attend to the prosecution with the greatest dispatch. By reference to our register, we find that we have made upward of twenty thousand preliminary examinations into the novelty of alleged new inventions. This great experience, together with the fact that a large proportion of all the business with the Patent Office for the past twenty years has been conducted through this Agency, suggests to inventors the surest and best means to secure their rights.

We give opinions free, and all we require is a rough sketch and description of the invention.

Inventions patented through this Agency receive notice in the SCIENTIFIC AMERICAN.

OVERWORK AND UNDERWORK.

The majority of mankind need no caution against overwork. Where work kills one, the want of work kills ten, the fires of passion consume twenty, sinful indulgence destroys fifty. In cases where work seems to undermine health, it is not so often that the labor is too much, as the faulty way in which it is done, the spirit in which it is performed. Labor, to be permanently endurable, must be healthy; that is, it must be adapted to the mental and physical capacities of the worker, and especially if brain labor, it must be pleasing. It must not be allowed to intrench upon sleep, to interfere with the regular and deliberate taking of food, nor prevent a proper amount of recreation and exercise. Those who write upon this subject rarely look beyond the surface of the matter. Dyspepsia is traced to hasty meals and want of exercise, softening of the brain to excessive thinking, and so on. The why the meals are hasty, or the brain overtaxed, seems to escape notice.

It were easy to get a hint that would lead to the real truth—if the same superficial observation did not prevent it—from the exceptional cases; the men whose brows are sunny and unseamed; whose laugh is hearty and ringing, notwithstanding they perform an amount of work which seems almost incredible to those whose own toils are so onerous that it passes their conception how flesh, and blood, and mind, could possibly endure more. The healthiest men we know are those who do not work the hardest, but do the most work. There is no paradox about this. Every business man sees among his employés examples of men who work hard yet accomplish little, others who easily accomplish much.

How is this to be explained? Much is attributable to the want of system on the part of the inefficient, more to the want of the proper spirit. Nervous irritability is the greatest weakness of American character. It is the sharp grit which aggravates friction and cuts out the bearings of the entire human machine. Nine out of every ten men we meet are in a chronic state of annoyance. The least untoward thing sets them in a state of ferment. Impatience is the poison that heats the blood and ruins stomachs, more than excess of pepper and mustard. Every machinist knows that when a journal begins to cut, there is no help but to stop and cool it off, if ruin is to be avoided. Let it go on and it cuts faster and faster, till the crash comes. We are less wise as regards ourselves. We allow ourselves to fret, and to acquire the habit of fretting until fretting becomes chronic. We fret while we eat, and while we ought to sleep, and by fretting, rob nature of needful rest.

The machinist, when he finds his machinery squeaking, applies the oil; if the bearings have become so hot as to endanger the works, he stops and allows them to cool. The human machine should be treated in like manner. It should be kept well oiled and cool.

What is the oil that will stop the squeaking—the lubricator that will keep the machinery from heating? Dickens has given us the formula in the words of his inimitable Mark Tapley: "Keep jolly." Good humor is what will keep digestion perfect and the brain from softening, while it will, at the same time, keep the heart from hardening. We know a man who does, daily, an amount of work, the mere contemplation of which would give some of our nervous friends a fit of hysterics. We have seen his desk loaded down, before his arrival at his office, with a mass of matter which would have made our neighbor Stewandfret turn three shades more sallow than is his wont, if it did not bring on an attack of jaundice outright. He did not go into hysterics, nor get bilious he only laughed a good, hearty, rollicking laugh at the good joke of supposing one good-humored pair of hands could get through with such a stack of business in a single day. And then, to turn the joke from himself, he went at it, put it all through in good style, and had his hearty laugh again, at the end of it, and went home self-satisfied and content. No danger of his getting dyspeptic, or his brain softening; he keeps his machinery oiled. He is not one of those described by Hood,

> "Morbid, all bile and verjuice and nerves;
> Where other people would make preserves,
> He turns his fruit into pickles."

He will outlive two such, and do the work of four. His sleep will always be blest with the "Golden dreams that make men awake hungry."

SOMETHING WORTH CONSIDERATION.

The recent unparalled feat of pedestrianism accomplished by Weston, coupled with the fact that he attributes his previous failures to the circumstances under which the unsuccessful attempts were made, opens a question of much interest and practical importance. He states that walking in a circle has proved much more fatiguing than the accomplishment of an equal distance over a diversified road, in spite of the ups and downs, and the inferior qualities of the roadway.

Physiologists will at once refer this phenomenon to the category of reflex nervous influences, the effects of which are so familiar, in the well known occurrences of giddiness, seasickness, etc.; but the fact that the effect in this case has not been determined by sensation merely, but by a general result, is enough to prompt inquiry, whether like effects may not be a matter of every day occurrence, in many departments of labor. How far a continuous monotonous motion may affect the sensorium, and through it prove weakening to physical energy, seems worthy of consideration. A large class of people are called upon to perform labor where wheels and shafting are kept in rapid rotation. Should this be found to be injurious, the extension of the practice of boxing in gears may be found to be a measure of economy as well as of comfort.

ACCURATE OBSERVATION.

We often receive communications from correspondents informing us of the occurrence of remarkable phenomena, which are of little value, because the observations were neither accurate or intelligent. The fact that an aerolite has fallen here, or that a house has been struck by lightning there, when nothing but the bald fact is stated, is worth nothing. Such a matter may be of local interest but it is of no general importance. Aerolites fall, hurricanes blow, thunder storms prevail, and property is injured by lightning daily somewhere; the particular *where* is of no consequence except to those immediately interested.

People at large seem not to appreciate the value of observation directed to a fixed purpose. If the time an aerolite is absolutely visible is correctly ascertained, that fact is of value; so is the direction of its motion. The quarter from which a hurricane proceeds in any given locality is a valuable piece of information. A sufficient number of such observations would enable us to chart out its entire course, extent, and duration, and to form some idea of causes and indications. The point is this; it is not the fact that any event occurs that is valuable to science, it is the *how* it occurs. That can be used to determine the great underlying principle, the why it occurs.

Mere looking on, without a thought of anything but wonder at a phenomenon, is not, and never will be of any profit. The expeditions which were sent at so great an expense to India to observe the recent solar eclipse, went for a purpose. Each individual knew beforehand what he was to look for and either its presence or absence, would, if observed, have been a valuable datum for astronomical science. So any particulars regarding the duration of the passage of aerolites, the direction from which they come, their effects upon magnets, etc., are of value. The rapidity with which such observations can be made is astonishing when the mind is properly trained to observation and strict system is used.

There are, however, a great many things in nature that can be observed at leisure, and from which much valuable instruction can be derived. Ruskin, the celebrated art author, and professor in the Workingmen's College, in London, has said that the greatest difficulty in teaching pupils to draw, is to learn them to see things rightly. We have often astonished old farmers by splitting a pea or a bean, and showing them, snugly and beautifully folded away, the first leaflets of the future plant in the seed. They had never noticed it, and its discovery was a new revelation of the principles of plant growth surprising and interesting. There is not a flower, seed, rock, pebble, or leaf, that will not repay close scrutiny or study. The closer the inspection the more profitable it will be, both as regards the knowledge obtained and the increased power to observe, and the pleasure which always attends the study of God's works.

SOME SUGGESTIONS ON WORKINGMEN'S COMBINATIONS.

We have always deprecated the arraying of class against class, the combination of employés against employers, and *vice versa*, simply because the lessons of history, experience, and observation, show that the result is not beneficial to either. In standing aloof from these organizations, and refusing to encourage them, we may have incurred the displeasure of those who believe more in the strong right arm than in the power of the claims of simple justice properly presented.

Still, we believe that associations of workingmen may be made advantageous to them, and beneficial to society. Not, however, in assuming powers, and putting forth claims which are equally inoperative and unfounded in right, but in advancing the arts by contributions to the great sea of knowledge whose tides are always in motion. There is no mechanic but does, in his experience, occasionally, at least, note some fact that may be of benefit to his fellows.

Yet it is unpleasant to know that our working thinkers, our mechanics, should be content, as they usually are, with their own acquirements, and be so slow to impart the knowledge they possess. The columns of the SCIENTIFIC AMERICAN are always open to the statements of new processes of work, new discoveries, and useful suggestions, and it contains much valuable matter, each week, sent by practical men; but there can be no reasonable doubt but that much that would be beneficial to the workers of the country is withheld, not because of a selfish desire to reap all the benefits of an improvement, but simply because of the want of energy and thoughtfulness of our mechanics. The workman ought to keep a written record of his experiences, especially when they arise from trials with new materials, or with new methods, and contribute to the advancement of the arts by their occasional publication. The effort would not be an onerous one, and would greatly assist others who are struggling and stumbling in the same path. The experience of veteran mechanics and engineers is invaluable to the neophyte. Their instructions have the power of authority, and the force of inspiration. A habit of close observation, and of recording facts, should be cultivated by our mechanics. The amount of useful knowledge thus accumulated, by even the humblest mechanic, in a twelvemonth, would surprise him. He might find, occasionally, that he had been forestalled in his notice of a fact by others, but he would also find that others would be compelled to acknowledge themselves his debtors in relation to other facts.

Such a course, especially if the efforts of the workingmen were concentrated by associations, would, in time, make the workers the power, as they are the majority, in the country. By the mutual improvement gained by this mutual instruction they would assert their power by their individual merit, and gain by the sheer force of the value of their attainments and services, the compensation, recognition, and position they now seek, vainly, we think, in combinations calculated if not intended to overawe by numbers where the victory should be gained by actual merit. Then there would be no necessity of forcing upon a reluctant employer the inefficient, when he could easily get the skillful; and the one price system, well enough in the business of the sidewalk merchant, "anything on this board for a shilling," would give place to the reasonable plan of paying for just what one gets.

The advanced class of workers, civil engineers, etc., seem to be wiser in this respect. The London Institution of Engineers numbers more than a thousand members, all workers; and the value of this society is seen in the beauty and utility of their works all over the world, combining the very latest improvements in the employment of material with the greatest degree of elegance in design, and the shrewdest conception in avoiding and overcoming obstacles. Scarcely any important public or private work is undertaken that has not secured the approbation of this society. It is a power in all the vast possessions of the British Empire. Similar societies of engineers exist in Prussia, France, Belgium, and other countries. Here we have the American Society of Civil Engineers, located in New York city, which offers its rooms and the privileges of its membership to all, in whatever part of the country, who choose to avail themselves of the opportunity. In time, we believe, and hope, this society will dictate to engineers, and suggest to employers the qualifications necessary to success, as those in other countries have.

There is no reason why this system of mutual information should not extend to our ordinary mechanics. Such a society, national, even universal in its scope, may have hundreds of branches, and by the education of its members render unnecessary the bolstering up of inefficient workmen, by assisting them to become worthy of the places they are ambitious to occupy. Such a trades union would commend itself to employers as well as to employés.

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VENTRILOQUISM.

All have heard and read of the art of ventriloquism. How it came to receive such an inappropriate name would be an interesting inquiry, but foreign to our present purpose. Nothing in the derivation of the word gives the least clue to the means by which the effect is produced, or the true nature of the effect itself. The word is derived from the Latin *venter*, the belly, and *loquor*, to speak. The Germans have it *das Bauchreden*, belly-speaking. The old idea that the voice came from the belly has been so long exploded that a more philosophical name ought to have been adopted ere this.

The analogies between light and sound are so remarkable that the most eminent modern scientists make great use of them for purposes of illustration in the lecture room; yet much as we have read upon the subject of sound and light we have never seen these analogies applied to the elucidation of the phenomena of ventriloquism. We purpose to make such an application in the present article.

Ventriloquism bears the same relation to other phenomena of sound that perspective does to optical phenomena. The art of perspective consists in portraying upon a flat surface the appearance of objects at a distance from it, so that the same effect shall be produced upon the eye by the picture as would be produced by the objects themselves In order to do this, the form, tints, and shadows are reproduced, not as they really are, but as they are modified by position and distance. Or it may be said to consist in making and arranging a group of objects so that when *viewed* at a given distance they shall produce the same optical effect produced by another set of objects arranged in different positions and at different distances

Ventriloquism consists in making and arranging sounds so that when *heard* at a given distance, they shall produce the same effect upon the ear that another set of sounds produce arranged in different positions and at different distances

It was formerly supposed that some peculiar conformation of the vocal organs was necessary to the ventriloquist, but such is not the case. The means by which sounds can be imitated, are not solely confined to voice. In an article entitled "Possibility of Speech to those hitherto Considered Mutes," published on page 389, Vol. XVI'I., of the SCIENTIFIC AMERICAN, we gave an account of a case in which the larynx was entirely closed, breathing being performed by means of a tracheotomy tube inserted in the windpipe, audible speech not being prevented, although voice, properly speaking, was not possible. Nevertheless the tones produced by the vibrations of the vocal chords may be modified so greatly in pitch and quality, that many sounds differing widely from the tones used in speech and in singing may be imitated.

A good illustration of the action of the vocal chords may be obtained in the followieg manner. Take a short hollow tube, glass or metal, or even a piece of elder with the pith punched out will do Cut it off smoothly, and stretch a piece of elastic rubber over it winding it with a cord to keep it stretched. Now cut with a sharp knife a slit lengthwise in the rubber slip, so that it shall traverse the entire internal diameter of the tube. Blow through the opposite end, and a sound will be produced by the vibrations of the rubber. The tighter the rubber is drawn the higher will be the pitch of the sound emitted. The larynx is composed of five cartilages, the upper one being attached to a bone shaped like the letter U, called the hyoid bone. This organ may be distinctly felt from the outside, and it constitutes the prominence called "Adam's apple." It has two bands of ligamentous tissue—vocal chords—the edges of which are tightened and brought nearer together at will by a set of beautiful and delicate muscles. These bands are illustrated by the slitted rubber above described, the tube upon which it is stretched representing the windpipe. The forcing of air from the lungs sets these bands into vibration. The sounds thus produced are varied in pitch by the tightening or slackening of the vocal chords, and otherwise modified by the shape of the cavity of the mouth.

Sounds from a distance are of course weakened, and they also have another quality which may be compared to the indistinctness of outline in objects seen at a distance. As the colors of objects are partially obscured by the color of the medium through which they are viewed, so sounds coming from remote places are partially obscured by the sounds which pervade even the stillest atmosphere. In proportion as the fine ear of the ventriloquist can appreciate these modifications will be his success in imitating distant sounds. For as to see correctly is the first essential to success in drawing, so is hearing correctly the first essential in ventriloquism.

There are many sounds which cannot be imitated by voice merely, such as the singing of birds, the strident noise of a saw, the whistling of a plane, etc. Such and similar unmusical sounds are imitated by means of the teeth, the lips or the soft parts of the mouth Thus the noise of a saw is like that produced by hawking, only much prolonged, and modified by the cheeks; singing of birds may be imitated by whistling through the teeth. The foaming of soda water by breathing with open lips into a tumbler, etc. To persons having a fine ear this amusing art is not difficult, but we object to the name applied to it. It ought to be called *sound-painting*.

New Galvanic Exciting Liquid.

M. Delamier in a communication to the Academy of Science, states that the followiag mixture forms an exciting liquid for galvanic batteries of great energy and economy, disengaging no deleterious fumes or gas. Dissolve twenty parts by weight of proto-sulphate of iron in thirty six parts of water. Then stir in seven parts of a solution of sulphuric acid (equal parts); then in the same manner add one part of diluted nitric acid (equal parts).

MANUFACTURE OF WHITE LEAD.

White lead, or cabonate of lead, is extensively used in the arts. As a pigment, when pure and mixed with linseed oil, it produces a beautiful white. It is also the base and vehicle for colors used in painting. Cements for metals are composed mainly of it, and in the preparation of vulcanized rubber and liquid gutta percha it enters largely. In medicine it is employed mixed with linseed oil as an ointment for burns, scalds, ulcers, and excoriations. Of all the different preparations of lead the carbonate is the most poisonous to the human system, inducing what is know as the painter's colic in those engaged in its manufacture and in painters. This terrible disease, even if not fatal, frequently produces local paralysis, and the victim becomes a permanent cripple.

The method of manufacture is simple. The material, usually in pigs, of the purest quality, is melted in a fixed kettle and then run into very thin sheets. When made by hand, the process of casting these sheets requires considerable skill. The operator holds in his left hand, by a suitable handle, a sort of shovel of sheet brass, the sides turned up, and dipping up a small quantity of the melted metal, he dexterously throws it over the surface of shovel, when it almost instantly cools in a thin sheet, the superfluous portion of the metal running back into the kettle. A number of these sheets are loosely coiled, forming a sort of cylinder to be submitted to the after action of the acid.

In large concerns, however, this hand casting has been superseded by a method very much superior, the invention of Mr. Augustus Graham, of Brooklyn, N Y. A series of molds, corresponding to the shovel just mentioned, and connected to an endless chain, are successively presented to a current of melted lead, forming sheets in the shape of grates, called "buckles" from their resemblance to the large shoe and knee buckles worn in former times These buckles are discharged at the further end of the apron and placed in earthen pots, their edges resting on inward projecting ledges about three inches from the bottoms of the pots Each pot contains a small quantity of acetic acid, not however reaching the lead buckles. The pots have holes near the top and they are set on a floor covered with tan, the holes of the pots opposite each other to insure a free passage, from one to the other, of the acidulated gases. The first layer of pots is covered with boards over which is spread another layer of tan and on this another layer of pots, and so on to the hight of perhaps twenty feet. The whole is covered with a thick layer of tan.

Then the process of decomposition begins. The tan ferments, generating heat, which causes the vinegar to evaporate and its vapors to circulate among the lead. This goes on for several weeks and the white carbonate falls down in snowy heaps. When the process is supposed to be completed, or the action of the acid ceases, the pile is taken down, the carbonate removed, and those portions of the lead which have not been reduced, called "blue lead," are cleansed of their white coating and returned to the melting pot.

The carbonate or white lead in the form of powder is then washed in tanks with water. These tanks are placed high enough to draw off the lead paste from their bottoms to immense pans called drying kilns, which have false bottoms, between which and the true bottoms steam is admitted to hasten the evaporation of the water. When dry the powdered lead may be packed ready for market, but usually it is ground in oil in which form it is generally sold.

It is seldom, however, that it is offered pure; sulphate of barytes being extensively used to adulterate it. This substance is nearly as heavy as white lead, and is perfectly white but not so brilliant. It has not the body of white lead, but is not so easily affected in color by noxious gases, white lead being soon discolored by sulphureted hydrogen gas.

THE MANUFACTURE OF STRAW BOARD.

The manufacture of straw board is a growing industry in this country. Notwithstanding it is comparatively modern, its increase has been so great, that it has nearly trebled the price of straw during a period of twenty years. Although based upon the same general principles as paper making, it differs from the methods employed for fine papers, in several important particulars, some of the processes being omitted and others not required in the latter being necessary.

The first process consists in boiling the straw with quicklime. This is done in a wooden digester which takes steam from a boiler. The straw is packed in layers with the lime between them, and the whole boiled for from ten to twelve hours according to circumstances. The rationale of this process is based upon the nature of the material. Straw is composed of a tube of woody fiber and cellular tissue, having upon its outer surface a cuticle composed of silicates of potassa and soda with some free silica. The woody fiber also contains some silica. To the silicious cuticle the straw owes in great part its strength. The same cuticle also covers the leaves of the different grains and grasses, and gives them the sharp cutting edge often observed in the coarser varieties. The boiling process is therefore chemical in its effect. The reaction which takes place is the combination of the lime and the silica, which leaves the straw in a soft and pulpy state. The mass is now ground by a machine similar in principle to that used for grinding the ordinary paper pulp, namely: a revolving cylinder upon which knives are fixed which play between a series of fixed knives on a bed plate. The straw is not chopped by these knives but is gradually disintegrated until it is reduced to a uniform pulp.

The entire mass is now drawn into a vat, which contains water and is kept constantly agitated by a series of revolving arms. A wire gage cylinder is so adjusted that it will revolve partially beneath the surface of the fluid mass. The pulp adheres to the gauze, and is carried around to another cylinder around which an endless belt of felt runs. The latter cylinder presses upon the gauze and by this means the pulp is made to adhere to the felt, and condensed so as to give it enough consistency to be taken up by another cylinder called a forming cylinder. This cylinder is one of a pair made of polished metal, and by them the pulp is strongly compressed. The pulp is wound around the former until the proper thickness is reached; this is determined by an indicator. Along the forming cylinder there is a groove planed out, through which the operator now rapidly passes a wooden knife thus severing the soft board; and at the same time he unwinds the sheet and removes it. These sheets are cut so as to form other sizes, and then dried which completes the process. Woolen rags are sometimes ground and mixed with the straw pulp. This makes a much darker colored and heavier board, which is worth considerably more than the pure straw board.

The boards as thus manufactured are applicable to a great variety of useful purposes, among which bookbinding, button making, and paper box manufacture are most prominent.

WEALTH AND ITS SOURCE.---A GRACEFUL RECOGNITION.

It may be fashionable to decry the decadence of the age, the facilities of getting rich by the circumstance of our latest (and may it be our last) war, and to harp upon the selfishness of war contractors, and capitalists, but while such men as George W. Childs, and many others we might name exist, they, by their acts, give the lie to these unfounded calumnies on the present generation. It is but a short time ago that we noticed the generous act of Mr. Childs, in providing each of his employés with a life insurance policy, and now we find the same generous spirit manifested in providing a resting place for the remains of the members of the Philadelphia Typographical Society, in the donation of a plot, in the Woodlands Cemetery, Philadelphia, comprising an area of two thousand superficial feet inclosed with a marole wall, and having a handsome marble gateway.

On Saturday, Oct. 17th, this plot was dedicated by proper ceremonials, and accepted, in a series of resolutions, by the Philadelphia Typographical Society. Among the distinguished guests and speakers, who took part in the ceremonies, were Hon Ellis Lewis, late Chief Justice of the Supreme Court of Pennsylvania, who is the oldest member of the New York Typographical Society, and one of the oldest practical printers in the United States; Hon Morton McMichael, Mayor of Philadelphia, the oldest newspaper publisher in the city; Henry C. Carey. LL D., the oldest book publisher; Louis A. Godey, the oldest magazine publisher; Col. John W. Forney; William Prescott Smith, of Baltimore; Anthony J. Drexel, F. J. Dreer, Joseph Harrison, J B Lippincott, and others.

Mill on Co-operation.

John Stuart Mill, the celebrated political economist, has written a letter to the Illustrated Weekly News, upon co-operation. He says:

"I am quite of the opinion that the various forms of co-operation (among which the one most widely applicable at present to production, as distinguished from distribution, is what you term the system of small per centage partnerships) are the real and only thorough means of healing the feud between capitalists and laborers, and while tending to supercede trade unions, are meanwhile a natural and gradually increasing corrective of their operation. I look also with hope to the ultimate working of the foreign combination.

"The operatives are now fully alive to this part of the case, and are beginning to try how far the combination principle among laborers for wages admits of its becoming international, as it has already become national, instead of only local, and general, instead of being confined to each trade, without help from other trades. The final experiment has thus commenced, the result of which will fix the limit of what the trade union principle can do. And the larger view of questions which these considerations open up, and which is already visibly enlightning the minds of the more advanced work people, will dispose them more and more to look for the just improvement of their condition, rather in becoming their own capitalists, or allying themselves on fair conditions with the owners of capital, than in their present uncomfortable and often disastrous relations with them."

Double Propellers.

We find in a daily cotemporary—always enterprising and interesting, and generally correct — the following item of *news:*

"The latest marine contrivance is the double propeller about being introduced by the French Transatlantic Company. Instead of a single screw resting on the keel of the ship, there are two screws placed one on each side of the stern with the rudder between. It is claimed that the new arrangement will increase speed, work more easily, produce less strain and wear on the vessel, and give a new impulse to the movement by which propellers are slowly crowding side-wheels from the ocean."

It would not be inappropriate to, advise our cotemporary, and its thousands of readers, to take the SCIENTIFIC AMERICAN, and learn that double propellers have been used for years. Terms of subscription, three dollars per year in advance.

WHEN Mr. Darwin was at Valparaiso he found beds of mussels and limpets at a hight of 1 300 feet above the level of the sea, and he expresses his conviction that these beds of shells had been raised to their present elevated position by a series of such earthquakes as those which have been experienced in recent times.

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American Railway Master Mechanics Association.

A convention of Railway Master Mechanics was held at Cleveland, Ohio, Sept 30, at which time an organization was formed, and the above title adopted The following officers were chosen: President, Mr. H. M. Britton, of the Indianapolis, Cincinnati and La Fayette Railway; Vice-president, Mr. N E. Chapman, of the Cleveland and Pittsburg Railway; Secretary, Mr. Frederick Grinnell, of the Atlantic and Great Western; Treasurer, Mr. S. S. Hayes, of the Illinois Central Railway. A constitution was adopted and signed by the gentlemen present, a large number of railroads being represented. A Committee on Order of Business was appointed, which reported the following subjects for discussion:

1. Are steel plates preferable to iron in the construction of locomotive boilers, and if so will the difference in strength, durability, and safety, justify the excess of cost of steel as compared with the cost of the best iron?

2d, What should be the thickness of steel or iron plates when used in the construction of the outside shell of a forty-eight inch boiler? Also the best and strongest mode of riveting and bracing the same?

3d, What water space is deemed best upon the sides and ends of a furnace, both for wood and coal burning engines?

4th, How does the durability of steel for furnaces and flue sheets compare with that of copper or best iron?

5th, What space should there be between the flues so as to obtain the greatest absorption of heat?

6th, What size flues and what length will give the best results in wood and coal burning engines?

7th, What is the experience of the different master mechanics as to the wear and tear of steel tires now in use on their respective roads?

8th, What are the views of this convention on the subject of packing for cylinder and stuffing boxes?

9th, What are best modes of preventing the formation of lime and other incrustations in boilers?

10th, What is the opinion of this convention as to the present system of safety valves, levers and fixtures upon locomotive and other boilers—is it the safest and best?

11th, Would not the adoption of a "lock up valve," that could not be interfered with by the engineer, tend to the prevention of explosions now so frequent?

The following committees were appointed to report upon these subjects at the next meeting:

On the articles 1st to 6th, inclusive, Messrs. Hayes, Jauriet, and Anderson; article 7th, Philbrick, Eddy, and Perry; article 8th, Brown, Chapman, and Smith; article 9th, Dripps, Towne, and Ray; article 10th and 11th, Stone, Young, and Wells.

On motion a committee of three—Messrs. Kinsey, Cooper, and Congdon—was appointed on valves anti-friction, size, etc. Messrs. Losey, Cullen, and Little, were appointed a committee on the explosion of boilers.

After the transaction of some minor business, the meeting adjourned, to meet at the shops of the Pennsylvania Central Railway at Pittsburgh, Pa., on the second Wednesday of September, 1869.

Adulterations in Vinegar.

The *Prairie Farmer*, has the following on adulterations in vinegar: Since the great increase in the price of high wines, on account of the heavy tax imposed by the Government, there has been a disposition, on the part of vinegar manufacturers, to produce the requisite degree of acidity by means of a cheaper substance than acetic acid, which forms the acidity of all pure vinegar, and which can only be produced by the oxidation of alcohol. Sulphuric, nitric, and hydrochloric acids are all employed for this purpose, but in the great majority of cases. the former is used, on account of its extreme cheapness and its intense sourness.

This acid may be detected, even in extremely small quantities, by taking a portion of the suspected vinegar, placing, it in a clear glass vessel, and dropping into it a few drops of a solution of the chloride of barium, or the nitrate of barita. If the vinegar remains clear after the introduction of this substance, it is sufficient proof that it contains no sulphuric acid. If, on the other hand, the liquid presents a cloudy appearance, it is on account of the formation of the sulpbate of barita, which will remain insoluble, whatever acid may be afterwards added.

The detection of nitric acid is not so easy. It may be discovered, however, by first adding to the vinegar placed in a wine glass, a few drops of sulphuric acid, waiting a few minutes for the mixture to cool, and then dropping in a crystal of the sulphate of iron, or copperas. If nitric acid is present, a brown ring will form around this substance, in the bottom of the glass.

To detect hydrochloric or muriatic acid, we have only to bring the suspected vinegar to a moderate heat, and to hold over it a glass rod or shaving of wood, moistened in aqua ammonia. If this acid be present, it will form white fumes as the two substances come in contact, forming, as they do, chloride of ammonium, or sal-ammoniac.

Ordinarily, however, it will only be necessary to test for sulphuric acid; but this should always be done before using vinegar, as this acid is very injurious to the health, and exceedingly liable to destroy substances placed in it to be preserved, as pickles. A few cents' worth of the substance we have recommended under this head, is sufficient to test all the vinegar which would be used in a family for many years. The cheapness of sulphuric acid is so great that vinegar may be made from it—or, rather, a substance that passes by the name of vinegar—for only a cent or two per gallon. That it is so made, is evident from the fact that carboys of sulphuric acid are to be found in most of the manufactories of "pure cider vinegar," in this as in other cities.

THE first mill in America for making sewing silks and twists by water was built by Rodney Hanks, in Mansfield, about fifty-eight years since. The first silk made by machinery in the United States was made in 1829, in Mansfield In 1814 silk rose to $30 a pound. The census of 1810 gives us the value of the silk manufacture and raw silk of Massachusetts and Connecticut for that year—$29,121. In Windham County, Connecticut, the value of these products in 1825 was $54,090. In 1831 Mansfield produced 84,000 worth of silk.

Can Any One Beat This?

OLD SAYBROOK, CONN., Sept. 26, 1868.

MESSRS. WHEELER & WILSON:

Gentlemen:—I wish to say that I have in my family a "Wheeler & Wilson Sewing Machine," that has been in almost *daily* use for the past ten (10) years, and not a thing has ever been done to it in way of repairing; not a screw loose, or any part of it out of order in all that time. It has been used in making coats, vests, and pants, of the thickest of woolen goods, beside doing all kinds of family sewing, and is now, this day, the best machine for work I ever saw.

Can any one beat this?

Respectfully, GILBERT PRATT.

Any one who can beat this (and we think many can), will please address Messrs. WHEELER & WILSON, 625 Broadway, New York.

OFFICIAL REPORT OF PATENTS AND CLAIMS

Issued by the United States Patent Office.

FOR THE WEEK ENDING OCTOBER 20, 1868.

Reported Officially for the Scientific American.

PATENTS ARE GRANTED FOR SEVENTEEN YEARS, the following being a schedule of fees:—

On filing each Caveat	$10
On filing each application for a Patent, except for a design	$15
On issuing each original Patent	$20
On appeal to Commissioner of Patents	$20
On application for Reissue	$30
On application for Extension of Patent	$50
On granting the Extension	$50
On filing a Disclaimer	$10
On filing application for Design (three and a half years)	$10
On filing application for Design (seven years)	$15
On filing application for Design (fourteen years)	$30

In addition to which there are some small revenue-stamp taxes. Residents of Canada and Nova Scotia pay $500 on application.

☞ *Pamphlets containing the Patent Laws and full particulars of the mode of applying for Letters Patent, specifying size of model required, and much other information useful to Inventors, may be had gratis by addressing MUNN & CO., Publishers of the Scientific American, New York.*

83,124.—CAR-COUPLING.—George S. Acker, Kalamazoo, assignor to himself and H. A. Lacey, Detroit, Mich.

I claim the plates, J and K, thimble, L, hasp, M, and channel, N, in connection with the link, I, and pin, D, and draw bar, A when arranged and operating substantially as and for the purposes set forth.

83,125.—BOILER SAFETY VALVE.—Edward Andrews, Pottsville Pa. Antedated October 9, 1868.

I claim, 1st. The arrangement and combination of the balanced valve. E, with the valve, J, lever. H, piston, K, and yoke D.

2d The arrangement of the box, B, inclosing the valves, J and W and lever. H.

83,126.—INKSTAND.—H. P. Andrews, and M. E. Rawson, Cleveland, Ohio.

We claim, 1st. An ink-elevating elastic air sack, constructed with a perforated corking end, which is of thicker material than the body of the sack, substantially as described.

2d, The horizontally sliding cover, D, pressure plate, F, one or more air chambers, E, and one or more ink reservoirs, G. combined and operating substantially as described.

3d, The cover, D, pivored at b, and extended into a lever beyond said pivoted point, and connected with a laterally rocking or rolling plate, F, substantially in the manner described

4th The ink reservoirs. G G, in combination with a case. A which is provided with a removable top and means for effecting the raising of ink to supply cups by the movement of a single cover to said cups, substantially as described.

83,127.—REVENUE STAMP FOR LIQUOR BARRELS.—George W. Bishop, Baltimore, Md. Antedated October 6, 1868.

I claim, 1st, The oblong plate, A, provided with flanges on the sides, and with a central box, B, when constructed substantially as and for the purposes specified.

2d, The "stamp," C. made of soft metal, and provided with pins, b b, as described, and used with the beveled box, B, substantially as set forth.

3d, The combination of the perforated slide, D, with the box, B, in the plate, A, and stamp, C, when used as and for the purposes specified.

4th, The forms, i i', placed in the plate, A, under the slide, D, as and for the purposes specified.

83,128.—GROOVING MACHINE.—William H. Bond, and George G. Lee, Syracuse, N. Y.

We claim an arm, B, when constructed in such manner as to alternately present a plain or grooved rolling face, as desired, substantially as and for the purpose herein described.

83,129.—PERMUTATION LOCK.—Edward W. Brettell, Elizabeth, N. J.

I claim the hollow wheel, B, pawl, t, with its arms, r and s, in combination with the inner circular tumblers, and the case, A, all constructed and arranged to operate in the manner and for the purpose set forth.

83,130.—PLOW POINT.—Lyman D. Burch, Sherburne, N. Y.

I claim, 1st, The ribs or braces, D, D1, and D2, constructed and operating substantially as described.

2d, The stays, E and E', constructed and operating substantially as described.

83,131.—SAW FRAME.—Beauman Butler, and Charles F. Ramsay, St. Johnsbury, Vt.

We claim, 1st, The saw frame, constructed substantially as above described with a rigid end, A A' C E, and a flexible end, B C E'.

2d, The provision, in a buck saw frame, of the spring or cushion, G G', substantially as and for the purpose set forth.

3d, The slotted ears, I I, or their equivalent, employed to connect the cross bar and end piece, and permit mutual play between them, substantially as described.

83,132.—HOSE, AND MACHINE FOR MAKING HOSE.—George Coles, London, and James Archibald Jacques, and John Americus Fanshawe, Tottenham, England. Patented in England August 17, 1864.

We claim, 1st, As a new article of manufacture, flexible hose, when constructed substantially as and for the purpose specified.

2d, The apparatus, constructed as described, whereby alternate layers or piles of yarn or thread are laid helically round the core in opposite directions, as herein set forth and shown.

83,133.—FEEDING MECHANISM FOR SEWING MACHINES.—J. L. Coles, and David H. Coles, New York city.

We claim, 1st, The cam slide, C, in combination with the feed bar, A, substantially as and for the purpose described.

2d, The feed bar, A, in combination with the cam slide, C, constructed as described, and its mechanism for adjustment, as and for the purpose set forth.

3d, The adjusting screw, G, in combination with the cam slide, C, and feed bar, A, substantially as and for the purpose described.

83,134.—SNAP HOOK.—Edward A. Cooper, Buffalo, N. Y.

I claim the hook, A, cast with hinge pin, e, and cross bar, h, in combination with the grooved tongue, D, and bow spring, h, when the parts are arranged and secured together in the manner described.

83,135.—VENTING CORE.—George G. Cressey, Philadelphia, Pa Antedated October 8, 1868.

I claim the box, E, its plate, G, and prints, H, in combination with the sliding plate, F, and its pointed wires, K, and the mechanism herein described, or its equivalent, for imparting the desired movement to the said plates.

83,136.—BOAT DETACHING APPARATUS.—Thomas L Cuthbert, Charleston county, S. C., assignor to himself, Nathaniel Levin, and Edward J. Marks.

I claim the "marine cradle," by which ships' boats or yawls may be lowered and detached in the manner described in the above specification, or any other substantially the same, and which will produce the intended effect.

83,137.—LOCK FOR TRUNKS, PIANOS, ETC.—C. N. Cutter (assignor to Davis, Hill & Co.), Worcester, Mass.

I claim, 1st, The combination, with the face plate, D, of the hinged tongue C, substantially as and for the purposes set forth.

2d, The combination, with the face-plate, D, of the hinged tongue, C and spring, E, substantially as and for the purposes set forth.

83,138.—TRACK LIFTER.—Charles De Bergue, Westminster, Great Britain.

I claim the within described instrument, consisting of the metal bed plate, a, pivoted lever, b, and operating screw, e, the whole constructed and operating substantially as and for the purpose herein set forth.

83,139.—STOVE-PIPE DAMPER.—William H. Deily, Sycamore, Ill.

I claim the two part case, formed by the parts, A and M, having flanges, D B, for supporting the joints of pipe, and a recess inside, in which a damper, H, is made to operate for regulating the draft, substantially as and for the purpos set forth.

83,140.—NOZZLE FOR CANS.—Frederick W. Devoe, New York city.

I claim, 1st, The plate, C, made separate from the nozzle and can, in combination with the nozzle and the can, substantially as and for the purpose herein specified.

2d, The box formed within the nozzle by the closed bottom, C, and the cap or stopper, substantially as herein described.

83,141.—CLOTH DRAWERS.—Job Dyson, New Britain, Conn.

I claim cloth drawers made by forming each half or leg portion in one piece, with the seam down the back of the leg, and an opening, B, suitably located to form the body connection of the two legs, substantially as shown and described.

83,142.—RAILROAD-CAR HEATER.—John C. Eckert, Dayton, Ohio.

I claim, 1st, The knob or trigger, N, in combination with the vase, for the purpose set forth.

2d, The inner catch, T, with the shutter, P, its spring, S, and arm, Q, as herein described and shown.

3d, The falling door or shutter, C, and spring, E, acting in combination with the slot, D, the lever, F, and slide, G, arranged to operate substantially as herein described, and for the purposes set forth.

83,143.—PAPER CUTTING MACHINE.—Spencer Ellsworth, Lacon, Ill.

I claim, 1st, The combination of the bar or way, C, the sliding carriage, D, the vertically adjustable knife, K, and screw, S, all arranged, constructed, and operating in the manner and for the purposes herein set forth.

2d, The combination of the bar, C, provided with the grooves, c, the carriage, D, provided with the rib, b, and adjustable rib, d, and the screw, L, all arranged to operate in the manner and for the purposes described.

3d, The combination of the bar, C, carriage, D, knife, K, screw, S, movable rib guide, d, and screw, L, all arranged in the manner and for the purposes specified and shown.

4th, The combination of the bar, C, frame, A, rods, F, springs, G, treadle, N, and toothed plate, P, arranged to operate as specified, and for the purposes set forth.

83,144.—PERMUTATION LOCK.—William F. Ensign, Troy, N. Y.

I claim, in combination, the interlocking of the wheels or tumblers, and closing of the gateway in the wheels by the slides, as shown and described.

83,145.—WASHING MACHINE.—Robert E. Ferguson, Chicago, Ill.

I claim the arrangement of the wringer rib, I, centrally over the tub of the machine, when supported upon a bar or bars, C D, which at the same time encloses and protects the gearing of the machine from the water expressed from the clothes by the wringer, all constructed and operating as and for the purposes specified.

83,146.—COMBINED SKIRT AND HOSE SUPPORTER.—Maria J. Fiske, Charlestown, Mass.

I claim the skirt-supporter, B, to which are attached the hose supporters, D, the latter being provided with hip pads, C, and the whole being combined and arranged substantially as set forth.

83,147.—MACHINE FOR CARBURETING AIR.—Theodore F. Frank, Buffalo, N. Y.

I claim, 1st, An upright cylindrical vessel forming the carbureting chamber, D, regulating compartment, G, and water tank, I, containing the air drum, H, arranged respectively one above the other, and with the suoporting frame, A A' B, and operating weights, W W, substantially in the manner and for th.

2d, The combination and arrangement of the elevated pipe, b, with the regulating vessel, G G', substantially as and for the purpose specified.

83,148.—SPLINT KNIFE.—Samuel Friend and John McCollom, Decatur, Ill.

We claim the construction and arrangement of the stock, A, flat rectangular knife blade, B, secured thereto by means of the stirrups, a a, and adjusted by means of the set screws, b b, curved metal spring apron, C, secured to the beveled under side of said stock, A, its outer end projecting thereform and guiding the splints, as herein set forth, for the purpose specified.

83,149.—PLASTIC COMPOSITION.—Hannah C. Gaskin, Union Vale, N. Y.

I claim, 1st. A plastic composition of flour or starch, treated substantially as described, in combination with glue, resin, gum, or other equivalent substance, as described.

2d, The new article of plastic manufacture, substantially as described.

83,150.—REIN HOLDER.—Lorenzo D. Gillett Rochester, and Henry W. Inman, Detroit, Mich.

We claim the construction of a rein holder, with bed plate A, curved lever, F, and spring, D, arranged and operating substantially as herein described.

83,151.—SEED PLANTER.—John M. Gitchell, Haverhill, assignor to J. F. Morse, North Haverhill, N. H

I claim for effecting the reciprocating movements of the slider F, by means of the wheel or roller, H, the combination of the vibratory frame, G, the pulleys, the cranked shaft, and the pitman, arranged with the slider, the wheel shaft, and the hopper, in manner, and to operate with an endless band or chain, substantially as specified.

83,152.—MANUFACTURE OF SHOT.—William Glasgow, Jr., and John G. Wood, St. Louis, Mo.

We claim, 1st, The method herein described of producing shot, consisting substantially in dropping the metal, in a molten state, through a column of glycerin, oil, or other similar fluid, instead of air.

2d, The heating of said column at or near the top, so that the molten shot shall first impinge upon the heated portion of the medium, and be quickly cooled by its descent into the cooler portion of the same.

3d, The employment of an adjustable bearing apparatus, so arranged and operating as to impart heat to any desired part of the cooling column, substantially as and for the purpose set forth.

4th, The construction of the cooling reservoir with a lateral branch for the withdrawal of the shot, substantially as herein shown and described.

83,153.—BILLIARD TABLE.—Karl Gudenoge, San Francisco, Cal.

I claim the construction of a billiard table by the arrangement of the longitudinal slats, a a, transverse slats, b b, longitudinal rails, c c c, and alternate wide boards or pieces, d d d, placed edgewise, and held by the transverse bars, e e e, or equivalents, substantially as and for the purpose described, in combination with the papier maché or pasteboard bed, A, applied and prepared as specified.

83,154.—COMBINED PLOW AND HARROW.—Jacob Haessel, St, Louis, Mo.

I claim the arrangement of the harrows, D, with the plow, A B, in the manner shown and described.

83,155.—CORN HARVESTER.—John D. Hampshire, Paper Mills Post Office, Md.

I claim, 1st, The circular saw or cutter, E, perforated with holes, k, and arranged in connection with the spring bar, O, bar, Q and discharging bar R, to operate in the manner substantially as and for the purpose set forth.

2d, The bow, U, connected with the discharging bar, R, and arranged to operate in connection therewith substantially in the manner as and for the purpose set forth.

3d, The reel, M, in combination with the circular saw or cutter, E, arranged to operate substantially as and for the purpose specified.

4th, The combination of the saw or cutter, E, reel, M, spring bar, O, bar, Q, discharging bar, R, and bow, U, all arranged to operate in the manner substantially as and for the purpose set forth.

83,156.—AUGER HANDLE.—T. C. Hendry (assignor to himself and R. B. Smith), Union Point, Ga.

I claim the combination of the socket, A, formed by two tubes, a and b, crossing each other, with the handle, B, made adjustable in the socket, b, and the auger shank, c having a ratchet thereon, extending up through the tube a, and handle. B, all constructed and arranged substantially as and for the purposes herein specified.

83,157.—FASTENING FOR CHECK HOOKS AND TERRETS.—A. L. Hill, Decatur, Ill.

I claim the screw, B, with a flat head, D, having its corners, a, turned upwards, and used for connecting the terret or check hook, A, when said terret or hook is provided with a female screw in the shank, all substantially as herein shown and described.

83,158.—SEEDING MACHINE.—Frank A. Hill, Marysville, Cal.

I claim the frame, A, provided with the shares or teeth A, in combination with seed box, D, provided with the toothed shafts, E E, rotated in opposite directions from the wheels, B B, and also provided with the fixed and adjustable perforated plates, e e', all arranged to operate in the manner substantially as and for the purpose set forth.

83,159.—RAILROAD AXLE.—George H. Hoagland, Port Jervis, N. Y. Antedated October 10, 1868.

I claim a wrought iron axle, constructed with steel journal casings, extending about midway into the eye of the wheel, substantially as and for the purposes specified.

83,160.—TOY.—John L. Holt, Providence R. I.

I claim, 1st, The toy, consisting of the self-sustaining pendulum, A B C, and of the figures or images, E E, having loose swinging limbs or part, F F, attached thereto, so that constantly varying pictures and positions are produced, substantially as described.

2d, The pin, c, when provided with the fastening arms, d, and when secured to the images, E, to suspend the limbs, F, as specified.

3d, The disk, D, when provided with a stock, or with its equivalent, the spring, g, and when so arranged that figures or images, E, can be easily fastened to and removed from it, as specified.

4th, The manner herein shown and described of fastening the sustaining plates, G, to the figures, E, by cutting pointed pinions, h, out of the former, and fastening them to the figures, as set forth.

5th, The manner herein shown and described of suspending the members, F, from the figures, E, by fastening tubes, i, to the figures, and pins, j, to the members and securing and arranging all as herein shown and described.

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83,161.—FEED WATER HEATER FOR STEAM BOILERS.—B. A. Hopkins, Sodus, N. Y.

I claim the exhaust pipe, C c, and cold water pipe, E, in connection with tank, D d s, constructed, arranged and operating as herein shown and described, and for the purpose set forth.

83,162.—STEAM GENERATOR. — Frank M. Horning, East Pike, N. Y.

I claim, 1st, The scroll sheets, u, in combination with the fire box, A, and air vessel, B, whereby the air from the latter is heated before being discharged into the fire box, substantially as herein shown and described.

2d. The port, J, constructed as described, and containing the fuel box, K, in combination with the pipes, L N, fire box, A, and air vessel, B, operating substantially as described, to supply fuel to the fire box.

3d, The hot-air pipe, V, having the cap, 1, and perforations, 2, arranged with relation to the furnace, A and pipe, F, whereby to separate the ashes from the heated gases, so that the former will not be forced into the generator, substantially as here in shown and described.

4th, The arrangement of the hot air pipe, V, within the water supply pipes, whereby the former is protected by an annular sheet of water, substantially as herein shown and described.

5th, The spiral blades, x, arranged as described, within the generators, D E, whereby the heated gases are deflected as they enter the generator, substantially as herein set forth and shown.

83,163.—VENTILATING FRUIT HOUSES.—J. S. Houghton and Charles B. Rees, Philadelphia, Pa.

We claim the combination and arrangement of the open spaces or flues, B, in the walls, A, with the preserving room, B, and ventilated loft, D, subtantially as described.

83,164.—HARVESTER.—Henry Howe, Oneonta, N. Y.

I claim the pinions, a b, hung loosely on the ends of the counter shaft, E, and connected respectively with the sliding spring clutches, c d, or their equivalents, and meshing into the internal gearing of the driving wheels, C and D, respectively, the pinion, a, on the opposite side of the cutting apparatus, being smaller than, b, substantially as described, for the purpose of balancing the strain of the machine and for allowing it to cut when it turns a corner, as specified.

83,165.—VAT FOR CYLINDER PAPER MACHINES.—Amasa Howland, Sandy Hill, N. Y.

I claim, 1st, The construction of my improved vat, for the purpose and in the manner above set forth and described.

2d, The introduction of the pulpy fluid in such a manner as to create currents across the under or lateral surface of the gathering cylinder, substantially in the manner and for the purpose above described.

83,166.—CHIMNEY COWL.—B. Irrgang, Philadelphia, Pa.

I claim a ventilator or cowl, having inclined edges, and shields projecting from the cowl at the sides of the doors, all substantially as and for the purpose described.

83,167.—MODE OF PUTTING UP STARCH FOR USE.—Alexander Irwin, Madison, Ind.

I claim forming the wet starch into cubical packages, of uniform size and equal weight, as a new process of manufacture.

83,168.—SAW FILING MACHINE.—D. H. Iseminger, McLean, Ill.

I claim the construction and arrangement of the bar, a, swivel mechanism, d e e, slotted plate, f, guide rod, g, arm, h, and file stock. k n i, all operating as described, in connection with the saw clamps, B B, for the purpose specified.

83,169.—STEAM GENERATOR.—Ralph H. Isham, Brooklyn, N. Y.

I claim the construction and combination of the box distributer, B, and tube, C, with the boiler, A, substantially as set forth.

83,170.—CARRIAGE SPRING.—John Jackson, Owego, N. Y.

I claim the combination of the twist of steel, the circular arm, the strap or chain for the arm to play on, the ratchet wheel and lever to adjust or change the power of the spring to carry either a light or heavy load.

83,171.—VAPOR BURNER.—W. W. Jacobs, Hagerstown, Md.

I claim, 1st, The annular wooden disk, C, secured between metallic plates, h i, to the generator, F, as herein shown and described, whereby the said generator may be adjusted without inconvenience from heat, the heat radiating from the parts E F, not being conducted by the disk, C.

2d, The lamp burner, constructed as described, and consisting of the generator, F, perforated at, J, wick tube, E, annular wooden disks, B C, and metallic plates, h i c d, all arranged and combined to operate in the manner and for the purpose set forth.

83,172.—MACHINE FOR MOLDING, ROUNDING, AND CHANNELING SOLES OF BOOTS AND SHOES.—Albert Jeffers, Lynn, Mass.

I claim, 1st, The combination, in an organized machine, of mechanisms for molding and channeling and rounding a sole, under the arrangement, and for operation, substantially as herein set forth.

2d, As a means of molding a sole, the combination of the molding block, w, and the supporting last or bed, z, the former being supported by and swiveled to the sliding frame, b, and operated by the cam groove, u, or its equivalent, and the latter provided with a series of points or spurs, b b1, etc.; the whole being substantially as herein before referred to and explained.

3d, For actuating the movements of the sliding frame, b, the combination of the weight or its equivalent, applied as described, with the cam groove and the tripper, s, essentially as explained.

4th, In combination with the cam groove and tripper last mentioned, the employment of the deflector, n2, applied and operating in manner and for the purpose as before explained.

5th, For effecting the alternate movements of the screw, and as a consequence the reciprocating movements of the bed, the employment of the two semi-clutches, h1 h2, operating in connection with a collar, g1, revolved by the endless belts, k1 l1, and adjusted and controlled by the shipping bar, m1, and its adjuncts, for the purpose as hereinbefore referred to and explained.

6th, In combination with the last described arrangement of parts, the employment of the locking bolts, r2, actuated by a suitable device, the purpose of such bolts being as before explained.

7th, The head stock of the machine, as composed of the segmental dovetailed block, s1, the supporting lever plate or carriage, t1, the plate or carriage, v1, the swiveling plate, x1, the carriage, z1, and the tool carrier, g2, under the general combination and arrangement as before alluded to and described.

8th, The mode of applying the carriage, z1, to the swiveling plate, x1, before described, that is, by means of the coiled springs, a3 a3, applied to the shaft, as explained, the latter being provided with the lever or handle, in manner as before set forth; and, in combination with the springs, a3 a3, shaft, e2, and handle, e2, the employment of the bent spring, i2, in manner and operating as before explained.

9th, I claim applying the cutter head, n2, to its supporting carriage, in such manner as to turn it into a vertical position, or to remove it from contact with the bed, x, essentially as described.

10th, In combination with the swiveling plate, x1, the employment of the friction rollers, y2 y2, for the purpose of maintaining the cutting knife, k2, parallel to the edge of the bed, x, as before explained.

84,173.—SCREW SOCKET FOR BRUSH HANDLES.—Wm. H. Johnson, Philadelphia, Pa.

I claim a cast screw socket having a flange, a, ears, c c, and longitudinal ribs, e, to be inserted in the body of the brush, substantially in the manner hereinbefore described, and for the purpose specified.

83,174.—CARRIAGE BRAKE.—Samuel D. Kimble, Allegheny City, Pa.

I claim the disk, A, and notched wheel, A2, with the levers, B and B', when connected with the hub, A, and axle tree, R, as described, in combinntion with the crank lever, D, levers, C and C', strap, E, cords, E1 and E2, and neck yoke, G, with its devices, when constructed, combined, and arranged, substantially as herein described and for the purpose set forth.

83,175.—HORSE HAY FORK.—Jesse B. Kurtz, Davisburg, Pa.

I claim the center tine, A, provided with the side tines, C C, in combination with the knife, H, constructed substantially as shown and described, and operating as and for the purposes herein set forth.

83,176.—RAIN-WATER CUT OFF.—Robert S. Laird and Wm. F. Stone, Sandwich, Ill.

We claim the combination and arrangement of the hinged pipe, C, slide, D, and flanged plate, F, provided with two nozzles, m m, all constructed, arranged, and operated for a direct lateral movement, in the manner and for the purpose set forth.

83,177.—METHOD OF WELDING TIRES.—Isaac Lamplugh, Peoria, Ill. Antedated October 3, 1868.

I claim the combination of the tire, A, provided with a V-shaped notch at each end, within which is inserted a diamond shaped plug, B, which is welded to and forms a part of the tire, in the manner and for the purposes set forth.

83,178.—FRUIT GATHERER.—Chas. F. Lang, Venedy, Ill.

I claim the combination of the head piece, A', hooks, a, sliding head, C, hooks, c, guides, D, operating handle, E, and pouch, B, substantially as and for the purposes set forth.

83,179.—MANUFACTURE OF CARD CLOTHING.—Ed. S. Lawrence, Worcester, Mass,

I claim, 1st, Card clothing, made or composed of a series of teeth set in paper backs, A, in a moistened state, and then dried, substantially as and for the purposes set forth.

2d, Card clothing, made or composed of a series of teeth set in wet or moistened paper backs, and then the sides of the backs subjected to pressure while the drying operation is completed, substantially as and for the purpose set forth.

3d, Card clothing, made or composed of a series of teeth, C, set in moistened or wet paper backs, in the manner above described, whereby the teeth are supported by elevations or gums, b, substantially as shown in the drawings.

83,180.—HAND SEED DRILL.—Wm. Ledlie and Geo. L. Gray, Jefferson, Ill.

We claim, 1st, The combination of the oscillating seed hopper, C, having the feed roller, E, therein, with the tube, c, having the funnel, d, attached, and the furrow opener, D, all constructed and arranged substantially as described.

2d, The V-shaped opening in the hopper, with the slides, f and i, arranged to operate substantially as and for the purpose set forth.

83,181.—TURNING LATHE.—Stephen R. Lewis, Rockford, Ill.

I claim the combination and arrangement of the tool rests, F and I, with the cutting tools secured thereto, with segment wheel, K, and pinion, K', and racks, J and L, the whole constructed substantially as described and operating as and for the purpose set forth.

83,182.—PRINTING CERTAIN TEXTILE FABRICS AND YARNS. John Lightfoot, Lower House, near Burnley, England.

I claim, as novel, the making of blue and green colors from this and the previously-described solutions, in such a manner that the indigotine remains combined or mixed with such a small proportion of tin that none, or nearly none, is fixed in the fiber by the subsequent processes, and consequently that there is no tin lake found with the dye stuff, to spoil the purity of the blue and green.

I am aware that carbonate of potash has, most probably, been used to fix fast blue and green made with indigo and tin, but I am not aware that it has been used to fix aluminous and ferruginous mordants at the same time. and I therefore claim the use of carbonate of potash for fixing simultaneously indigotine colors and mordants intended for dyeing.

I am also aware that alkaline silicates have been used to fix mordants intended for dyeing, and that even they have been proposed to be used cool, and stronger than in the usual way of using them as cow dung substitutes, but what, to the best of my belief, has not been done is the simultaneous fixing of ordinary mordants and indigotine colors by alkaline silicates, and I therefore claim their use for this purpose, to whatever manner they may be employed.

83,183.—SHIFTING BUGGY TOP.—Thomas Lodge, New Lisbon, Ohio.

I claim the spring levers, G G, in combination with screw hook, F, button or head, F', handle, B, frame, C, standards, B, and angle irons, E, on seat, A, all constructed to operate in the manner substantially as described.

83,184.—FENCE.—Obadiah Love, Saxenburg, Pa.

I claim the fence above described, consisting essentially of the rails, A A, posts, B C, hasps, D D, and staples, E E, all said parts being constructed and combined together in the manner and for the purposes set forth.

83,185.—DIVIDER FOR HARVESTERS. — Joseph J. Lurvey, North Prairie, Wis.

I claim the described divider when constructed of the biturcated part and the vibrating cutting arm, the whole being attached and oberated substantially as and for the purpose set forth.

83,186.—ROTARY STEAM ENGINE.—W. I. Lyman, Springfield, Mass.

I claim the arrangement of the ports, B and B', on each side of the chest, with the four armed piston hinged centrally, and head, C, substantially as herein shown and described.

83,187.—ROTARY CTLTIVATOR.—Stephen Mahurin assignor to himself and William Montgomery), Clayton, Ill.

I claim, 1st, The rotary toothed shafts, C, two or more, in combination with the reciprocating toothed bar, E, operated from one of the shafts, C, substantially as and for the purpose set forth.

2d, The combination of the reciprocating toothed bar, E, with the slot, g, in the front side of the hopper, F, and the adjustable slide, b, attached to the pivoted frame, F x, all arranged substantially in the manner as and for the purpose specified.

3d, The harrows, H H, attached by hinges or joints, j j, in combination with the rotary toothed shafts and the seed-distributing apparatus, all arranged substantially as and for the purpose set forth.

83,188.—PISTON FOR STEAM ENGINES.—H. N. J. Mansfield, Malone, N. Y.

I claim the construction of the piston head for horizontal cylinders, with the projection lip, A, and indention, A', near its periphery, whereby to obtain upward pressure of steam, all substantially as herein set forth.

83,189.—WHEEL BARROW.—E. B. Marshall, Atlanta, Ga.

I claim the springs, D, made of wood, iron, steel, or other suitable material, and attached to vehicles of any description, substantially as and for the purposes herein set forth.

83,190.—STATION INDICATOR.—E. B. Marshall, Atlanta, Ga.

I claim the movable and reversable rim, A, when so arranged, with the names or the different stations inscribed upon it, and in combination with a clock, that said clock will show at a glance when the train or conveyance is due at any or all stations on the road, substantially as and for the purposes herein set forth.

83,191.—BRICK MACHINE.—James Martin, Jersey City, assignor to Henry Martin, Keyport, N. J.

I claim the arrangement and combination of the rock shaft, Ex, spring pawl, H, lever, D*, and G, and rods or connections, h C*, with the lever, I, substantially as shown and described for the purpose specified.

83,192.—APPARATUS FOR STORING PETROLEUM.—Ignace Mathei, Antwerp, Belgium.

I claim, 1st, The herein-described method of storing or warehousing petroleum, mineral oils, and other liquids, by the employment of a series of inclined planes, arranged in a reservoir or basin of water, substantially in the manner shown and set forth.

2d, An apparatus for warehousing petroleum and other like liquids constructed substantially in the manner herein described.

83,193.—INSTRUMENT FOR ATTACHING BUTTONS TO FABRICS.—Herrman Mauch, Providence, R. I.

I claim the arrangement of a spring, B, with a side opening in the jaw, operating substantially as and for the purpose specified.

Also, the combination of the sliding die, C, with its spring, F, and the spring, B, substantially as described.

83,194.—DOUBLE-BARRELED FIRE ARM.—Edward Maynard, Tarrytown, N. Y.

I claim two or more separate gun barrels, so united and attached together, by means of a projecting ring, plate, staple, or other equivalent device, firmly secured to one barrel, and embracing or entering the adjacent barrel or a lug or plate projecting therefrom, as to allow any one of them to expand and contract longitudinally, independently of the other, without changing or affecting the relative position of their axes, substantially as herein set forth.

83,195.—BRACKET AND RACK.—William A. Middleton, Harrisburg, Pa.

I claim the combination of the bracket, S M B, with the two series of arms, a a' b b' c c', d d', with or without the hooks, as and for the purpose specified.

83,196.—BEAM AND GIRDER.—James Montgomery, Croton Landing, N. Y. Antedated October 10, 1868.

I claim, 1st, A beam or girder, formed with heads, A A, connected, by converging shoulders, C C, to a web, B, which tapers from both heads toward its mid-width or transverse center, substantially as and for the purpose explained.

2d, Jointing together two or more of my improved beams, in substantially the manner herein described, so as to make them mutually support each other.

3d, The flanges, D, for supporting the flooring, F, in the manner specified

4th, In combination with a beam or girder, constructed as set forth in the first clause, the bolt or key, H h, applied and operating as explained.

83,197.—FARM GATE.—Peter Mougey, Marshallsville, Ohio.

I claim, 1st, The operating gate plate, M, when constructed with a central hole, of the same shape and nearly the same size as the cross section of the gate post, C, and used around said gate post, and in combination with the rods, L K, and carriage levers, I I', J J', substantially as and for the purpose herein specified.

2d, The peculiar arrangement and combination of the latch, E, with arm, F, the rod, G, double crank rod, a H b, and a gate plate, M, the several parts being constructed and arranged as shown, and used in combination with the gate, C A B D, and latch post, P, substantially as and for the purpose herein specified.

88,198.—COCKLE AND GARLIC SEPARATOR.—J. W. Neal, and A. J. Truxell, Big Lick, Va. Antedated October 9, 1868.

We claim the arrangement of the cylinders, B B, having perforated metal faces, upon the frame, A, in such a manner that one end of each cylinder is elevated above the other, so that the grain will pass from the hopper, C, down in between the cylinders, and pass down the inclined plane thus formed, all constructed and used as specified.

83,199.—HOT AIR ATTACHMENT TO COOKING STOVES.—John Norris, Mount Pleasant, Md.

I claim, as an attachment to a "ten plate" stove, the oven door, constructed with a bay, E, and collar, E', and having connected therewith the pipe, F, provided with the caps, e m, the whole operating in the manner and for the purposes specified.

83,200.—MACHINE FOR MOLDING SHEET METAL WINDOW AND DOOR CAPS.—Joseph Parkin, and James H. Smith, Cleveland, Ohio.

We claim the adjustable auxiliary roller, K, rollers, C C', adjustable standards, B, and guide, L, all combined and arranged to operate in the manner as and for the purpose set forth.

83,201.—MODE OF BINDING THE EDGES OF REIN HOLDERS.—Louis J. Parsons, New Bedford, Mass.

I claim the metallic frame, B2, for binding the edges of "reinholes" in carriage boots and horse blankets, and securing the flap which covers the front of rein hole in boots, made and applied substantially in the manner shown and described.

83,202.—ADJUSTABLE MUSKETO BAR FRAME.—Louis J. Parsons, New Bedford, Mass.

I claim a metallic musketo bar frame, in combination with springs and screws, as herein set forth and described, for the purpose specified.

83,203.—WHIP SOCKET.—Louis J. Parsons, New Bedford, Mass.

I claim making whip sockets in longitudinal sections, connected together at the bottom by springs or hinges, and held together at the top by an elastic band, as herein set forth and described.

83,204.—THILL GUARD.—Louis J. Parsons, New Bedford, Mass.

I claim the metallic safety guard, C, for thills of carriages, constructed and operating substantially as and for the purpose set forth and described, and applied in any practical manner.

83,205.—MODE OF FASTENING APRON HOOKS TO THE DASHER FALLS OF CARRIAGES.—Louis J. Parsons, New Bedford, Mass.

I claim securing hooks or rings to "dasher falls" by metallic clasp, B2, substantially in the manner described.

83,206.—PLOW.—Yarnall Rakestrow, Whitehouse, Ohio.

I claim the point, F, and cutter, F, in combination with standard, C, substantially as set forth.

83,207.—ROLLING HORSE SHOE BLANKS.—Abram Reese, Pittsburg, Pa.

I claim, 1st, Dispensing with the collar on the rolls, which, in machines heretofore made, confine the inner edge of the shoe blank, by arranging the prints, i i, one or more, and collar, b', on a smooth-faced roll, A', and without any confining collar, in the manner shown and described.

2d, The arrangement of the part collar, d, and prints, e, alternately with each other, on the face of the roll, and opposite to the full collar, b, so as to limit the spread of the iron at the heel parts of the blank or bar, and at the same time permit the free spread of the iron over the prints, e, at and near the toe parts of the blank or bar, substantially as hereinbefore set forth.

83,208.—MACHINE FOR SOLDERING SHEET METAL BOXES.—C. L. Rehn, Philadelphia, Pa.

I claim the concave disk, F, arranged to revolve above a series of gas burners, or equivalent heaters, as and for the purpose herein set forth.

83,209.—MACHINE FOR MAKING METAL BOXES.—C. L. Rehn, Philadelphia, Pa.

I claim, 1st, Hinging the machine at a a, so that it may be turned to either a vertical or horizontal position, for the purpose described.

2d, The standard, p, rendered adjustable upon the frame of the machine, as described, so that its levers, J and K, may be adjusted to suit the size of the cylinder upon which they are caused to bear.

3d, The lever, K, with its spring, t, and blade, u, when operated by the lever, J, as described.

4th, The bar, l, secured to the frame of the machine, and rendered adjustable upon the same, in the manner and for the purpose set forth.

5th, The adjustable flanged guide blocks, m m, for the purpose specified

6th, The lever, H, when actuated by a spring, k, as described.

83,210.—MANUFACTURE OF GLASS WARE.—Daniel C. Ripley, Birmingham, Pa.

I claim the construction of a compound mold for making articles of pressed glass ware, substantially as described, in which the pressing fount shall itself be a mold, and shall at the same time be connected by a sprue or sprues with another mold, or with other molds, for forming the same or other articles of glass ware.

83,211.—TOY PISTOL.—Ezra Ripley, Troy, N. Y.

I claim the combination of the striking lever A, belt spring, B, and stud or support, C, for the belt spring and lever, with the stock, D E, and barrel or projectile holder, F, with or without a sliding follower, G, therein, all constructed and arranged to operate substantially as and for the purpose herein set forth.

Also, the combination of a trigger catch, H, striking lever, A, belt spring, B, stud, C, stock, D E, and projectile holder, F, with or without a follower therein, all constructed and arranged to operate substantially as herein described.

83,212.—TRAVELING BAG.—William Roemer, Newark, N. J.

I claim a frame for traveling bags or valises, being bulged at n and m, to form, in combination with plates, v and w, attached on the under side recesses or bearings for staples, A or B, to relieve the lock from strain, as described, constructed and arranged as herein specified.

83,213.—NUT.—Benj. D. Sanders, Wellsburg, W. Va.

I claim a metallic nut for screw bolts, having a concave or conical depression in the lower face, around the eye, substantially as and for the purpose described.

83,214.—NUT.—Benj. D. Sanders, Wellsburg, W. Va.

I claim, 1st, A metallic nut for screw bolts, having a body of square or other polygonal shape, with a cylindrical collar on its lower face, and a conical or concave depression around the eye, substantially as hereinbefore described.

2d, A metallic nut for screw bolts, having one or more recesses or steps around the eye, with a concavity or depression on its lower face, substantially as and for the purpose described.

83,215.—WATER CLOSET.—D. Schilling, Brooklyn, N. Y.

I claim a water closet, privy, or other seat, when provided with a receptacle or receptacles for a deodorizing or disinfecting agent or agents, in combination with an arrangement of mechanism substantially as herein described, by which such disinfectants can be discharged into the chamber or space about the bowl, etc., or into it, substantially as and for the purpose described.

83,216.—SWING.—Benj. F. Shaffer (assignor to himself and Wm. K. Young), Dayton, Ohio.

I claim the permanent arms, E E, the pivoted arms, D D, and treadle, F, constructed, arranged, and operating substantially as described and for the purpose specified.

83,217.—CARRIAGE SPRING.—T. J. Shears, Ypsilanti, Mich.

I claim the combination of the springs in the form described, composed of the coil springs, F, or rubber springs, G, with the subsidiary springs, H, when arranged substantially as herein described.

83,218.—WASH BOILER.—Pius L. Shepler and Samuel L. Irwin, Whitehouse, Ohio.

We claim the perforated sliding extension tube, E, in combination with the chambers, B, the grated false bottom, J, provided with button, G, and the lugs, H, on the boiler, A, substantially as and for the purposes set forth.

Also, the ears, C, in connection with the chambers, B, and the pit bottom of the boiler, A, substantially as described.

And the combination of all the above named parts with the faucet, I, when arranged and operating substantially as and for the purposes herein specified.

83,219.—TUCKING DEVICE FOR SEWING MACHINES.—R. H. St. John, Bellefontaine, Ohio.

I claim, 1st, The pressure gage plate, C, applied to the free end of a hinged handle, B, substantially as and for the purpose described.

2d, The pressure gage plate, C, on the hinged handle, B, in combination with the folding plate, D, substantially as described.

3d, The pressure gage, C, on the hinged handle, B, in combination with an adjustable guide, f, and a folding plate, substantially as described.

4th, The vertically adjustable gage plate, C, constructed with an extension guide, c, upon it, in combination with a shoulder, s, and extension guide, i, formed on a base plate, A, and a horizontally adjustable slide, D, substantially as described.

83,220.—BIRD TRAP.—James S. Stone and Geo. W. Chamberlin, Fitchburg, Mass.

We claim, 1st, The combination of the case and its catch mechanism with the spring, B, and noose, C, the whole constructed and operating in the manner and for the purposes above set forth and described.

2d, The beveled surface, J, for the purpose of throwing up the noose, C, substantially as set forth.

83,221.—ORE SEPARATOR AND CONCENTRATOR. — Richard Dunn Symons, John Tremelling Harry, and Samuel Stephens, Grass Valley, Cal.

We claim, 1st, In combination with the pan or tub, A, and chamber, H, the yoke, B, provided with stirrers or agitators, D D D1, and annular ring, D2, or their equivalents, substantially as and for the purpose described.

2d, The hollow vertical shaft, F', and driving shaft, F, with a half round opening, in which the half round depending spindle, E, of the yoke sets, substantially as described, for the purposes set forth.

3d, The pins, L L, on the gear I I', which operate the hammer, the weighted arm, M M, and the hammers, N N, the whole constructed and arranged to operate substantially as and for the purpose described.

83,222.—MANUFACTURE OF STEEL INGOTS.—Jno. Blake Tarr, Fair Haven, Mass.

I claim forming a hollow ingot under pressure, as herein described.

83,223.—CAST-STEEL TIRE.—John Blake Tarr, Fair Haven, Mass.

I claim, 1st, The machine for making a compressed steel car wheel tire substantially as described.

2d, As a new and improved article of manufacture, a compressed steel tire for a car wheel, made separate from, and adapted for being shrunk upon, the central portion of such wheel, substantially as described.

83,224.—STEAM ENGINE.—John Blake Tarr, Fair Haven, Mass.

I claim 1st, the mode of working an engine by steam which is reheated after it leaves the boiler, and when cut off from the boiler by the action of the pump, substantially as described.

2d, A pide or pipes leading from the steam boiler to the valve chest of an engine through a furnace, and provided with a forcing pump which is operated by said engine, substantially as described.

3d, In combination with a steam pipe, C, leading direct from a boiler to an engine, and provided with a cut-off valve, I claim the means for taking steam from said pipe, C, superheating it, and then conducting the superheated steam to the valve chest of said engine, substantially as described.

83,225.—SCREW BOLT.—Frederick Tudor, Boston, Mass.

I claim the within described screw bolt as an article of manufacture.

83,226.—WROUGHT IRON COLUMN. — George Walters and Thomas Shaffer, Phœnixville, Pa.

We claim an improved wrought iron or steel column, of which the shaft is formed by the combination of the ring bands, A, skewback bars, B, and binding bars, C, with each other, said parts being constructed and arranged and joined to the base and capital, substantially as herein shown and described and for the purpose set forth.

83,227.—HEAD REST.—Malon Warne, Philadelphia, Pa.

I claim the combination of a curved rod or bow, B, a padded strip, A, secured at the ends to the ends of the bow, and a strap secured to the bow, and adapted for attachment to the ceiling of a car, for the purpose specified.

83,228.—POLICEMAN'S MACE.—Mahlon Warne, Philadelphia Pa.

I claim, 1st, A mace, having a rigid handle or stem of metal, and a hollow head of india rubber, or other elastic material, filled with shot, or its equivalent.

2d, The combination of the tubular handle, A, sliding rod, B, its head, D and enlargement, d.

83,229.—SABOT.—Mahlon Warne, Philadelphia, Pa.

I claim, 1st, The T-shaped strip, k, secured at two of its ends to a plate, A, and having in the other end an opening, for the reception of a button on the plate, substantially as and for the purpose described.

2d, A strip, D, of cloth, or equivalent fabric, secured to the plate, A, in the manner described.

83,230.—WASHING MACHINE.—George R. Weber, Springfield, Ill.

I claim the combination of standard, B, fixed to the side of the tub, A lever, C, adjustable rod, D, rigid fingers, E E, used in connection with a common tub, and so arranged that clothes may be elevated and drained by the fastening device, F E.

83,231.—CONCENTRATOR FOR DRESSING ORES.—Henry Weston and George C. Langtry, Dayton, Nevada.

We claim, 1st, A copper lined table, D, with a longitudinal depression, O, and imparting to the said table a rectilinear alternate motion by means of the crank pin, K, working in the curved slot, J, or their equivalents, substantially as and for the purpose described.

2d, The manner of suspending the table to the rock shaft, and adjusting shaft, by the hangers, F F, jointed arms, G G, and the beam, I, for operating the said rock shaft, substantially as described.

3d, The shackle rod, M, attached to the arm, L, of the adjusting shaft, for raising and lowering the edge of the table, and the springs, T T, constructed and arranged to operate substantially as and for the purposes specified.

83,232.—STOVE GRATE.—George D. Woodworth, Chicago Ill.

I claim, 1st, The combination of the rotating independent center, E, whether provided with teeth, d, or not, with a grate, A, arranged to operate substantially in the manner herein described.

2d, In combination with the rotating center, E, a stirrer or flange, H, to operate substantially as and for the purposes set forth.

3d, Constructing the teeth, b, with slots, c, substantially in the manner and for the purposes herein specified.

4th, Providing the rim, A, with a wire edge, a, as and for the purposes shown and described.

83,233.—POST AUGER.—Calvin Adams, Pittsburg, Pa.

I claim a post auger, with one or more plows, constructed and arranged on the arms, and operating substantially as and for the purpose shown and described.

83,234.—KING BOLT AND WHIFFLETREE PLATE FOR VEHICLES.—Levi Adams, Amherst, Mass.

I claim the two plates, constructed as described, the one, A, provided with the parallel flanges, a a, semi-annular groove, b, and opening, c, the other, B, provided with the parallel flanges d d, semi-annular ledge, e, projection, f, tubular pendant, g, and reach extension, h, all arranged and operating as described for the purpose specified.

83,235.—DRAG BAR FOR CULTIVATOR.—Clark Alvord, Courtland, Wis.

I claim, 1st. The compound drag bar, as above described and shown.

2d, The construction of the cultivator tooth, and fastening it to the drag bar by passing the bolt through the angle, as above described and shown.

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3d, The movable clasp, in combination with the drag bar, as above described and shown and for the purpose above set forth.

83,236.—OUTLINE MAP TO TEACH GEOGRAPHY, ETC.—E. F. Anderson, Mansfield, Conn.

I claim the construction of an outline map, and the names of different divisions or parts thereof, so that the said names may be attached or detached, substantially in the manner as herein set forth.

83,237.—ELEVATOR FOR BUILDINGS.—James S. Baldwin, Newark, N. J.

I claim the automatic elevator, constructed and applied as and for the purpose set forth.

83,238.—HARROW.—W. H. Barry, Rabbit River, Mich.

I claim, 1st, The combination of the overlapping guard bars, B and E, with with the forward ends of the parts, D and A, substantially as herein shown and described and for the purpose set forth.

2d, The described arrangement of the curved metallic bars, C C, and straight bars, F, with relation to each other, the central part, A, of the harrow, the wings, D, and guards, B E, as herein described, for the purpose specified.

83,239.—APPARATUS FOR THE MANUFACTURE OF ILLUMINATING GAS.—John A. Bassett, Salem, Mass.

I claim, 1st, In an apparatus for carbureting air, the disk, C, made of wood, floating upon the surface of the hydrocarbon liquid and partially immersed therein.

2d, The disk, C, having radiating channels formed upon the under surface, for the purpose substantially as described.

83,240.—BAG TIE.—J. W. Bates, Glencoe, Minn.

I claim the arrangement of the wooden block, A, having the holes, a1 a2, and the slot, a3, terminating in the hole, a2, with the cord, C, all applied to the bag in the manner herein described and shown.

83,241.—VALVE ARRANGEMENT FOR ORGANS.—Moritz Baumgarten, Jr., New Haven, Conn.

I claim the valves, P R S, in number corresponding to the number of wind chests, constructed in the manner described and arranged and fixed upon the valve rod, L so as to be operated in their respective chambers, substantially in the manner herein set forth.

83,242.—RAILWAY SWITCH.—Hiram Beckwith, Grass Lake, Mich.

I claim, in combination with a switch lever, C, the bell crank, G, with the weight, b, and pin, i, arranged substantially as described, for the purposes set forth.

83,243.—MACHINE FOR DRESSING MILLSTONES.—William Bold, Sheboygan Falls, Wis.

I claim the combination of the pick block holder, E, and pick block, D, having the adjustable pick plates, H, and removable cap, G, with each other and with the adjustables frame, A B, substantially as described, for the purpose specified.

83,244.—BRICK MACHINE.—Geo. C. Bovey, Cincinnati, Ohio.

I claim, 1st, The arrangement of the pulverizers, M and M', and screen, N, in combination with the mold wheels, B C, of a brick machine, in the manner and for the purposes described.

2d, The arrangement of the fixed cam, I, having wings, I' I'', and flanges, J J', in combination with a series of plungers, E, having rollers, H, and outwardly-projecting shafts, h, for the object herein stated.

3d, In combination with the mold wheels, having radial compartments, D, and shoulders, d, the gravitating and weighted rollers, P, and bell cranks, p, substantially as herein set forth.

83,245.—WHEEL FOR VEHICLES.—R. J. Bowman, Mansfield, La.

I claim, 1st, The tubular rim, A, composed of two parts, constructed and fitted together in the manner substantially as and for the purpose set forth.

2d, The flat spokes, C, secured to the hollow rim, A, by means of the bent ends, e, angles plates, f, bolts, dx, and grooved blocks, g, and to the hub ring, D, by means of the cylindrical keys, i, and chambers, hx, substantially as herein shown and described.

3d, The combination of the rim, A, tire, B, spokes, C, and the hub, composed of the ring, D, and box, E, all constructed and arranged substantially as and for the purpose specified.

83,246.—GAS FIXTURE.—Nathaniel L. Bradley and John A. Evarts (assignors to Bradley and Hubbard), West Meriden, Conn.

We claim, as an article of manufacture, gas fixtures, the shell or ornamental part of which is formed of two parts of cast metal, one part being provided with a lip or lips, a, to cover the joint and form a rib, substantially as and for the purposes specified.

83,247.—CIGAR MACHINE.—Richard A. Bright, Jr., Providence, R. I.

I claim, 1st, A cigar machine, consisting of the stationary frame, A, carrying rollers, B C; of the swinging frame, E, carrying the rollers, F G H; of the header, J, follower, L, and cutter, O, all made and operating substantially as and for the purpose herein shown and described.

2d, The sliding follower, L, fitted to the end of the spindle, D, and made yielding by means of the spring, t, substantially as described, and operating for the purpose specified.

3d, The header, J, formed on a pin, p, and having the lips, r, as set forth for the purpose specified.

4th, The cutter, O, formed on the swinging weighted lever, N, substantially as set forth, the same being adjustable on the frame, E, as described for the purpose specified.

88,248.—SHUTTER AND BLIND OPERATOR.—Wm. E. Brooke, Trenton, N. J.

I claim the worm gear, C D, arm, E, slide, F, and slide bar, G, dove tail, b b, or their equivalents, when constructed, arranged, and combined substantially as and for the purposes herein described.

83,249.—COMPOUND FOR THE CURE OF DROPSY.—C. Brown, New Albany, Ind.

I claim a compound, or medicine, composed of the above mentioned ingredients, and used substantially as and for the purposes herein set forth.

83,250.—CHAIR SEAT.—H. Buchter, Louisville, Ky.

I claim the combination of the bent canes, B, grooved seat, A, and strip, C, as herein described, for the purpose specified.

83,251.—WASH BOILER.—John H. Burtis, Brooklyn, N. Y.

I claim the removable plates, e f, applied to a wash boiler, substantially as and for the purposes specified.

83,252.—CAR COUPLING.—W. E. Bush, Damascus, Pa.

I claim the springs, d d, with their shoulders, f f, and the lip, h, on the draw head, substantially as and for the purposes herein shown and described, in combination with a draw head of a car coupling.

83,253.—HAND STAMP.—N. C. Chamberlain, Boston, Mass.

I claim, 1st, The combination, with a die in a hand stamp, of three type wheels of equal diameter, each provided with exposed figures or letters upon their sides, substantially as and for the purpose set forth.

2d, Securing the saddle or type wheel holder to the plunger, by means of a screw bolt, substantially as and for the purpose specified.

3d, Constructing the saddle or type holder with flanges, i i, as and for the purpose described.

4th, The type wheel, n, provided with figures upon its side, when the said wheel is constructed and arranged between two wheels of equal diameter, as and for the purpose set forth.

5th, The type wheels, m and n, when the same are constructed and combined together, as and for the purpose described.

6th, The arrangement, whereby one detent serves to secure in position two of the type wheels, as specified.

83,254.—WASHING MACHINE.—C. F. Chambers, Hutsonville, Ill.

I claim, 1st, The peculiar construction of the said board, namely, the inclined and yielding frame, D, supported in front on springs, E, and at back on or near the tub bottom, and having hinged to its front and upper edge, the series of concave corrugated and yielding fingers, G, whose lower ends are supported on springs, I, in combination with a vibrating rubber.

2d, The yielding and swinging frame, K, having the double rubber, L L', and handle, P, in combination with a yielding concave board, substantially as set forth.

83,255.—GRAIN DRYER.—L. S. Chichester, Brooklyn, N.Y.

I claim a grain dryer, formed with air tubes running through the grain space, and opening at both ends, substantially as specified, whereby a current of air causes a circulation of the mass of grain during the drying operation, substantially as set forth.

83,256.—HEAD BLOCK FOR CARRIAGES.—T. M. Cluxton, Rising Sun, Ind.

I claim, in the T-shaped head block, A B, for carriages, the combination of the recessed extension arm, B, with the supporting plate, D, and braces, E E, arranged as herein described and set forth.

83,257.—BEE HIVE.—A. V. Conklin, Bennington, Ohio.

I claim, 1st, The square or angular case, B, folding roof or doors, D, when said case is elevated upon the vertex of the angle of its sides, in the manner as and for the purpose specified.

2d, The angular frames, F, when arranged within the case, B, so that the vertex of the angles of said frames shall coincide with the vertex of the angles of the case, in the manner and for the purpose set forth.

3d, The honey boxes, G G', frames, F, doors, D, and case, B, combined and arranged, in relation to each other, in the manner and for the purpose substantially as described.

83,258.—SEAT LOCK FOR CARRIAGES.—Wm. Conway, Rushville, N. Y.

I claim the bolt, b', provided with the tongue, b'', in combination with the sliding key, c, and the socket, a, as and for the purpose set forth.

83,259.—CULTIVATOR.—Wm. Custer, Shannondale, Ind.

I claim a shield or fender attachment to a plow, constructed and operating substantially as herein specified, and for the purposes mentioned.

83,260.—WASHING MACHINE.—G. A. Dabney, San Jose, Cal.

I claim the reversible rubber, G, constructed as described, in combination with the side bars, F, swing bars, D, and removable rubbing platform, K L, substantially as herein shown and described, and for the purpose set forth.

83,261.—BIT STOCK.—Benj. Darling, Bridgewater, Mass.

I claim, in combination with a bit stock, the sliding jaws, B B, whereby a bit or auger is fastened to the stock, substantially in the manner herein shown and described.

83,262.—SAWING MACHINE.—R. B. De Bare, Philadelphia, Pa.

I claim the arrangement of the half-pinion, U, with its reciprocating double rack, V, guide, Y, with its adjustable lever, G, grooved frame, C, guide plates, D D, and wood racks, K K, with their curved rack lever, L, when combined and operating with the adjustable cross cut saws, B B, as herein described and for the purposes set forth.

83,263.—BEE HOUSE.—Chas. Decker, New Michigan, Ill.

I claim the bee house, constructed as described, and divided into compartments, a b, by the central partition, c, each compartment adapted to receive its lower part the suspended comb frames, B E, above which the ordinary hive, D, is placed, supported on slats, h, and communicating with the entrance, g, by means of the board, h', as herein shown and described.

83,264.—APPARATUS FOR BOILING EGGS.—Ira Dimock, Florence, Mass.

I claim, 1st, The use, in an apparatus for boiling eggs, of a fluid, surrounded by a slow heat conducting material or air cavity, substantially as described, in combination with a bell or other sonorous annunciator, the striking hammer of which is actuated to strike the same, from the expansion of the said fluid, all as set forth.

2d, The use of a fluid in a case arranged to act, by expansion, on a piston or diaphragm, which will transmit movement, so as to release a catch and ring a bell, and substantially as shown and described, and for the purpose set forth.

3d, An egg-boiling apparatus, when constructed substantially as herein shown and described.

4th, The combination, in an egg-boiling apparatus, of an egg receptacle, a1, of any suitable form, with a case, b, inclosed by another case, c, to retard the penetration of heat to a fluid within the inner case, substantially as described.

83,265.—ICE-CREAM FREEZER.—James Dooling, Boston, Mass.

I claim, 1st, The means herein described of coupling the cream holders and beaters to the operative mechanism, and uncoupling the same, by giving to the sleeve shafts, O O, and the spindles, S S, a vertical motion up or down, by means of the lifting bar, P, and the levers, Q, or their equivalents, substantially as described.

2d, The within described arrangement of mechanism, or its mechanical equivalent, for controlling the operation of the cream holders and beaters, so that the cream holders may be made to rotate while the beaters remain inoperative, or the beaters may be rotated while the cream holders remain inoperative, or both the cream holders and the beaters may be rotated at the same time in opposite directions, substantially as described.

3d, The combination, with the two separate trains of gearing for transmitting the motion of the vertical driving shaft, G, to the cream holders and beaters, of a locking device for each, substantially as described.

4th, Forming the interior of the ice tank, so that its surface shall be approximately concentric to the exterior of a group of cream holders, substantially as described.

5th, Mounting the ice tank and contents upon a carriage moving on rails, in combination with stationary driving mechanism, operating substantially as described.

6th, The guides, Z Z, and the locking bolt, Y, in combination with an ice tank mounted on a carriage, substantially as described.

7th, The central beater wings, h h, attached to either side of the beater shaft, and curved partially around said shaft, parallel to its axis, when so constructed and applied that a free passage for the cream is left between its edge and the walls of the cream holder, substantially as described.

83,266.—SASH FASTENER.—John H. Douglass, Meriden, Conn.

I claim the follower, F, bolt, E, and lever, I, combined with the roller, L, and incline, C, when constructed and arranged to operate in the manner and for the purpose substantially as described.

83,267.—FILLING FORKS FOR LOOMS.—William G. Duce, Baltic, Conn., and Albert C. Eddy, Providence, R. I.

We claim the combination, with the filling fork, having tines of india-rubber, or other flexible and elastic material, of the protecting metallic shields, c c, substantially as described.

83,268.—WATER CHARGER FOR PUMPS.—Thomas Dutton, and Thomas Maguire, Port Jervis, N. Y.

We claim, 1st, The arrangement of the channels, b and c, in relation to the body of the charger, as herein recited.

2d, The charger, a, with its channels, b and c, and port or hole, f, all substantially as shown and described.

83,269.—BUGGY TOP FASTENING.—Daniel S. Early, Hummelstown, Penn.

I claim the jointed bars, M, in combination with the arm, n n, and sockets, o o, as and for the purpose described.

83,270.—REEL.—John S. Fenner, Warren, R. I., assignor to Inman Manufacturing Company.

I claim the hinged arm, C', applied and retained in position, as described, in combination with the immovable arms, C, and the pulley, A, all constructed in the manner and for the purpose described.

83,271.—COMBINED CORN PLANTER AND SHOVEL PLOW.—A. M. Franklin, W. J. Hastings, and J. A. Holford, Rising Sun, Ind.

We claim, 1st, The combination of the hopper, K, wheel, O, lever, N, bar, S, and box, T, all constructed as described, and supported by the cross bar, H, and bar, I, substantially as and for the purposes herein set forth.

2d, A double shovel plow, in combination with a movable corn planter, when both are constructed substantially as herein described, and operating as and for the purposes set forth.

83,272.—CAR COUPLING.—Jesse P. Freeman, Dalton, Ga.

I claim, 1st, The arrangement of two beaks or hooks, b b', upon a single draw head, in the position relatively with each other, substantially as shown and described, and for the purpose specified.

2d, The combination of a link, D, having the toe, n, and operating as described, with a rock shaft, E, supported by the end of the car above the draw head, and having attached to it a curved serrated arm, I, and a rope or crank for moving it, the whole operating together in the manner substantially as described, and for the purpose set forth.

83,273.—TONIC BITTERS.—Frank Fullerton, Williamsport, Pa.

I claim the within-described compound for tonic bitters, made of the ingredients and in the proportions as above set forth.

83,274.—CONSTRUCTION OF PICK AXES.—Morgan Gale, San Antonio, Mexico.

I claim the detachable socket, C, constructed with a base, c1, with or without the side or brace flanges, c2, in combination with the pick head, B, substantially as herein shown and described, and for the purpose set forth.

83,275.—LUBRICATOR FOR STEAM ENGINES.—George Girty, Rainier, Oregon.

I claim the two valves, L I, pipes, B E, oil chamber, D, and lever, F, all constructed and arranged to operate in the manner substantially as and for the purposes set forth.

83,276.—BINDING MERCANTILE BOOKS.—John H. Gleim, St. Louis, Mo.

I claim the combination of a journal or entry book, B, with the press copying book, A, into one volume, substantially as herein shown and described and for the purposes set forth.

83,277.—WASH BOILER.—S. A. Goodwin, Buffalo, N. Y.

I claim, 1st, In a wash boiler, the separation and collection from the washing solution of the dirt discharged from the articles washed, automatically, by subsidence or deposition, by means of an elevated pan or pans, E, or their equivalents, placed at some point or points on the line of circulation, as set forth.

2d, The plate, B, with its two rims and the settling pan, E, combined, substantially as and for the purposes described.

83,278.—WASH BOILER.—S. A. Goodwin, Buffalo, N. Y.

I claim, 1st, In connection with wash boilers of the class above mentioned, the filtration of the washing water automatically, as herein set forth.

2d, The inclined imperforated plates, D, bars, b', plates, B, and rim, g, combined together and arranged with the boiler, A, and pipe or pipes, C, substantially as and for the purpose described.

83,279.—METHOD OF DESTROYING INSECTS IN TREES AND PLANTS.—H. A. Graef, Brooklyn, N. Y.

I claim the described process of exterminating caterpillars, and measure worms, consisting in forcing a stream of water containing chloride of lime against the tree in which the insects are found, as herein shown and described.

83,280.—COMPOUND FOR DESTROYING INSECTS.—Martin Haas, New York city.

I claim the compound admixture in the proportions specified and for the purpose set forth.

83,281.—EGG HOLDER.—F. R. Harbaugh, Philadelphia, Pa.

I claim the the within described egg holder, composed of a base, A, two elastic arms, B and B', and two sections, D D, of a cup, or the equivalent to the same, the whole being constructed and arranged substantially as and for the purpose herein set forth.

83,282.—CHIMNEY.—Samuel Hoke, Mount Pleasant, Md.

I claim, 1st, The combination of the self-acting chambers, M, with the guides, K, when constructed with and operated by means of the vane, N, as herein described and for the purpose set forth.

2d, Also, an iron tubular chimney in sections, with a fire place, A, radiator, B, reel, P, cleaners, M, and vane, N, when constructed, combined, and operated as herein described and for the purposes set forth.

83,283.—GANG PLOW.—H. R. Huie, Hayward's, Cal.

I claim, 1st, Securing the arm, e, of the axle, f, to the axletree, a' by means of the eye bolt, i, as shown and described.

2d, The crank bolt, q, in combination with the eye bolt, r, for adjusting the tongue, as herein set forth.

3d, The arrangement and construction of the plate, l, ears, m, and boxes, n, which allows of their being cast as one piece, as herein described.

83,284.—ENVELOPE FOR NEEDLES.—Arthur James, Redditch, England.

I claim a needle case or wrapper made from a blank, formed and folded as herein described, and illustrated in the accompanying drawings.

83,285.—TRUNK HANDLE.—G. B. Jenkinson, Newark, N. J.

I claim, 1st, The sockets or plates, C C, constructed with the hollow shoulders or elevations, a a, with an aperture or opening between them, arranged and operated substantially as and for the purpose set forth.

2d, The clasps or plates, D D, provided with projections, d d, working in the sockets or plates, C C, as and for the purpose set forth.

83,286.—WINDOW BLIND.—Wm. Johnston, Cincinnati, Ohio.

I claim, 1st, The through cylindrical rod, B, fixed rigidly in the stiles, as an axle for a slat in window blinds, shutters, doors, and lower windows or openings to turn upon, substantially as herein described.

2d, The metallic slat, when formed with a tubular or hollow spine, running longitudinally through the same, and made to turn on the said cylindrical rods.

3d, The bushings, D, when provided with the annular flange, d, adapted to form a washer at the end of the slat, for the purpose specified.

83,287.—WHIP SOCKET.—John Julien, Christiansburg, assignor to himself and John F. Horr, Springfield, Ohio.

I claim a whip socket constructed with a lock, D, having a spring bolt, D', and flexible chain, C, notched curved piece, C1, and spring, C2, arranged to operate in combination, substantially as set forth.

83,288.—DUMPING PLATFORM.—S. C. Kenaga, Kankakee, Ill.

I claim the arrangement and construction of the floor, B, dumping platform, C, rods, X, and hub rings, y', lever, K, shaft, S, hasp, p', dogs, M, lever O, and trap door, Q, in combination with posts, A G and I, axle, D, caps, F, friction roller, S', fulcrum, L, rest, N, spout, T, and bin, U, substantially in the manner and for the purposes herein shown and described.

83,289.—APPARATUS FOR CARBURETING GAS.—Joshua Kidd, New York city.

I claim, 1st, The combination of intercepters, as H I, or any other suitable form or construction, interposed between the carbureting vessel, A B, and the burners of the same, to screen the heat from the lower part of the said vessel, and deflect it so as to act on or near the surface of the contained oil or carbureting fluid, all substantially as shown and described, and for the purpose set forth,

2d, The reflecting lip, d, substantially as described, in combination with the carbureting vessel, A B, and interceptor, H I, all as set forth.

83,290.—WEEDING HOE.—Lewis King, Oriskany Falls, N. Y.

I claim the weeding hoe substantially as herein shown and described, as a new article of manufacture.

83,291.—STEP LADDER.—M. C. Longacre, Cleveland, Ohio.

I claim the slotted metallic plate, b c, in combination with the hinged brace, D, and buttons, d e, when used in connection with a step ladder, substantially as and for the purpose described.

83,292.—SASH HOLDER.—Samuel L. Loomis (assignor to himself and Charles E. Walter), Byron, N. Y.

I claim the traversing slide, B, arranged in a groove in the side or edge of the sash, with the mortises, D, in said groove, with inclined bottoms, and the rubber or elastic rollers, arranged in the mortises, as described.

83,293.—BUTTON HOLE CUTTER.—A. J. Lytle, West Union, Ohio.

I claim the slotted plate, E, in combination with the slotted jaw, B, of a button hole cutter, as hereing described, for the purpose specified.

83,294.—HOLD BACK FOR CARRIAGES.—John A. McKinnon, Cleveland, Ohio.

I claim, 1, The loop, F, and yoke, D, arranged at right angles to each other, or nearly so, the latter passing around hook, B, and provided with the bar, having arms, E, substantially as and for the purposes set forth.

2d, The continuous band, I, attached to the hook, in combination with the key, J, and shaft, B, substantially as and for the purposes set forth.

3d, The loop, F, and yoke, D, provided with the cross bar and arms, E, in combination with the hook, B, and tongue, C, substantially as and for the purpose set forth.

83,295.—SAFETY VALVE.—William R. Malone, Mason City, West Virginia.

I claim the arrangement of the safety valve, B, exhaust pipe, D, provided with pipe connections, communicating with the furnace, the extension tube, C, and boiler, A, substantially as described.

83,296.—DITCHING MACHINE.—John Marsh, Seneca, Ill. Antedated September 28, 1868.

I claim, 1st, The combination of the lever, G, shaft, F, roller, H, and apron, I, with the lever, L, plow, K, apron frame, J, and shoe, M, substantially as and for the purpose described.

2d, The combination of the wheels, C C', frame, A, beam, K, double brace, N, guide, O, and brace, P, substantially as and for the purpose described.

83,297.—BRICK MACHINE.—Henry Martin, Keyport, N. J., assignor to James H. Kenick, New York city.

I claim, 1st, The plunger, I, constructed in sections, essentially as described by combining with the main plate or body of the plunger, loose end bars, r r, and a front plate or bar, u, adjustable, relatively to the main body, substantially as and for the purpose or purposes herein set forth.

2d, The application to the rod, G, to which the spring hook is attached, of the turn buckle, U, in the manner and for the purposes set forth.

83,298.—GRAIN WEIGHING AND TALLYING MACHINE.—F. S. McWhorter, St. George's, Delaware.

I claim, 1st, The sleeve, V, and choking plate, W, or the equivalent thereof, in combination with the steeyard, J, weight, K, sack holder, L L T, and spout, A, all substantially as shown and described, and for the purpose set forth.

2d, The steelyard arm, J, having a rigid connection with the choking plate, W, and loose connection with the sack holder, L L T, or its equivalent all substantially as and for the purpose shown and described.

3d, The sack holder, L L T, or its equivalent, in combination with the steelyard arm, J, weight, K, and spout, A, for the purpose of thrusting in a plate, W, to shut off the flow of grain, substantially as shown and described and for the general purpose set forth.

4th, The band, Q, and clips, f f, substantially as shown and described, in combination with the plates, L, all as and for the purpose set forth.

5th, The catch lever, n, and spur wheel, d, constructed and operating as shown and described, in combination with the choking plate, W, and any tallying mechanism, all as and for the purpose set forth.

6th, The arrangement of the tallying mechanism, consisting of the shaft, k, bearing the worm, l, gear, h, and pointer, a', the shaft, i, provided with the worm, j, and spur wheel, d, the pinion, g, and pointer, a, on shaft, m, all combined to operate as set forth, in connection with the weighing mechanism.

83,299.—PROCESS OF PRESERVING POTATOES.—Josiah Mumford, Clarksburg, Ohio.

I claim the above described process of preserving potatoes, viz., by dusting or sprinkling them with lime, and then packing them away in a composition of lime and loam or sand, as herein described and represented.

83,300.—CONSTRUCTION OF METALLIC SPOONS.—Frederick G Nienringhaus, St. Louis, Mo.

I claim a metallic spoon, fork, or similar utensil, provided with a handle, concaved or dished longitudinally on the upper side thereof, being curved from edge to edge, substantially as set forth.

Also, folding over and bending outwardly the edges of a fork, spoon, or similar utensil, at the juncture of the handle with the head or bowl thereof, substantially as herein set forth.

83,301.—COAL HOD.—Frederick G. Nedringhaus and William F. Niedringhaus, St, Louis, Mo.

We claim, 1st, A coal hod bottom, stamped up out of an unbroken piece of sheet metal, when provided with an upwardly-projecting flange, formed to receive, encircle, and embrace the lower edge of the body of the hod, substantially in the manner and for the purpose herein set forth.

83,302.—VALVE FOR PUMP.—John A. Nichols, Paterson, N.J.

I claim the valve case, A A', in combination with the valve, B, constructed and arranged to operate as described.

83,303.—RAILWAY RAIL JOINT.—Geo. Palmer, Littlestown, Pa.

I claim, 1st, The fish piece, C, lapping the rail joint, B, its upper surface as high as the level of the top of the rail, in length sufficient to rest upon two or more ties, and secured to said ties, independent of the fastenings of the rail.

2d, A wooden fish piece, provided with a metallic plate on its upper surface, lapping the rail joint, B, substantially as and for the purpose set forth.

3d, A fish piece, lapping the rail joint, B, and constructed with the grooved ends as shown and described, for the purpose of enabling the cars to regain the track, after having been thrown therefrom, as set forth.

83,304.—HARVESTER.—Isaac H. Palmer, Lodi, Wis.

I claim the combination of a reel, having the cross bar, N, as described, with the tilting platform, operated by the cross bar at every revolution of the reel, substantially in the manner described and shown.

83,305.—CARRIAGE STEP.—Geo. Panchot, Hastings, Minn.

I claim the attachable and removable carriage step, constructed substantially as above described.

83,306.—MORTISING MACHINE.—Francis Parker (assignor to himself and C. W. Ormsby), Petaluma, Cal.

I claim the gage rod, B, with the slides, D E F G, or their equivalents, together with the stops, R S T U V W, when constructed substantially in the manner and used for the purpose above described.

83,307.—WASH BOILER.—W. N. Peirce, West Boylston, Mass.

I claim the combination with the boiler, of the inclined and perforated base, F, and its central tube, supported upon legs or standards above the bottom of the boiler, in the manner described, so that a continuous space, c, shall intervene between the periphery of the base and the sides of the boiler, as and for the purposes set forth.

83,308.—MEAT CUTTER.—John G. Perry, Kingston, R. I.

I claim the curved or hollow plate, D, with openings, made substantially as described, for the purpose of holding the knives of a meat cutter.

83,309.—CONDENSER.—William Phelan, Peoria, Ill.

I claim, 1st, A central crowning cone, C, applied within the cones, J F, so as to form a condensing chamber, B, surrounded by a cool water chamber, F', substantially as described.

2d, Cones, C F, connected by a concavo-conved bottom, E, when these cones are arranged substantially as and for the purposes described.

3d, The jacket, J, and its concavo-convex bottom, G, with the cones, C F constructed and arranged substantially as described.

4th, The valve T, arranged with relation to the internal extension of feed pipe, D, substantially as described.

5th, The deflecting pipe, U, applied over the condenser, in combination with outlets, a, through the feed pipe, D, substantially as described, and for the purposes set forth.

6th, The arrangement of outlet pipes, O, with relation to chamber, F', and the outer jacket, J G, substantially as described.

7th, The arrangement of the valve, R, with relation to chamber, B1, and passage, S, substantially as described.

8th, The valve, T, arranged with relation to the internal extension of feed pipe, D, substantially as and for the purposes described.

9th, The deflecting plate, U, applied over the condenser, in combination with the outlets, d, through the feed pipe, D, substantially as and for the purposes described.

83,310.—IRONING TABLE.—James T. Piercy, Martinsburg, Ohio.

I claim the supporting frame, F, bar or support, e, standards, A A, and ironing board, d, all constructed and arranged substantially as set forth.

83,311.—PULVERIZING LAND ROLLER.—Frederick Post, Plano, Ill.

I claim the roller, A, in combination with the scraper, B, markers, C, sills, K K, cross bars, L L, bearings, G, and tongue, E, all constructed and operating substantially as described.

83,312.—FANNING MILL.—James P. Preston, Monroe, Wis.

I claim, 1st, The frame, M, hung to the faces, A A, by the metallic strips, as described, in combination with the spiral springs, substantially as described.

2d, The combination of the spout, z, and screens, K and L, the latter being provided with the door, a, and button, a', as and for the purposes set forth.

83,313.—FRUIT DRYER.—J. Walter Pyne, Danville, Ill.

I claim the combination of the perforated drawers, with the surrounding steam spaces, each one of which spaces is provided with an induction pipe, substantially as shown and described.

83,314.—CORN SHELLING MACHINE.—Joshua S. Rackham, Waterport, N. Y.

I claim, 1st, A hollow toothed corn shelling cylinder, composed of yielding segmental sections, substantially as and for the purpose described.

2d, The combination, with the same, of the cylinder, H, substantially as and for the purpose described.

3d, The combination, with the cylinder, H, and shell, B, of the screen and fan blower, substantially as and for the purpose described.

83,315.—STRAW CUTTER.—Ellery P. Ralph, and James Hannan, Gallipolis, Ohio.

We claim, 1st, The eccentric cam wheel, E, collar and lever, c and d, and

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guide, b, to which the knife, F, is attached, in combination with the frame, D, constructed substantially as described, and operating as and for the purposes set forth.

2d, The shaft, e, crank, f, lever, g, crank lever, h, rod, g', lever, i, and pawls, l' and j, in combination with wheels, k' and k, and rollers, m m, substantially as described, and operating as and for the purposes set forth.

83,316.—REFRIGERATING HOUSE.—Thos. L. Rankin, New Richmond, Ohio

I claim, 1st, Ice follower, h, constructed and operating substantially as and for the purposes described.

2d, The combination of ice floor, c, and pans, c, c', operating together for the purposes explained.

3d, The combination of ice floor, c, and follower, h, operating together substantially as and for the purposes explained.

83,317.—VARNISH.—Isaac Ranney, Delaware, Ohio.

I claim, 1st, The varnish compounded substantially as above, described.

2d, The process herein set forth of making the above described varnish.

83,318.—FASTENER FOR COLLARS AND NECKTIES.—Emanuel Rau, New York city.

I claim the stud, A, having an inclined side slot, g, as described, in combination with the pointed arm, d e, doubled or jointed at f, and having both a forward and lateral spring, when the parts are constructed to operate substantially as described.

83,319.—ELEVATOR.—John Jay Rea, Cadiz, Ohio.

I claim the beam, A, hooks, B B, forked track, C, provided with wheels, D D and E, trigger, L, pulley, E, cords, G K I, and weight, H, all combined and operating substantially as herein set forth.

83,320.—STEAM SAFETY VALVE.—Geo. W. Richardson, Troy, and Henry Watrman, Hudson, N. Y.

We claim, 1st, The lock-up bar or arch, J J, constructed substantially as shown and described.

2d, The construction of the branch or escape passage, N, substantially in the manner shown and described, it being so arranged as to prevent tampering with the valve or its adjustments.

3d, The combination of the valve, A, spring, C, spider, D D, cap, H, and lock-up bar, J J, substantially as shown and described.

4th, The arrangement of the branch escape passage, N, with reference to the valve, A, and spring, C.

5th, The arrangement of the lock up bar, J J, with reference to bolts, I I, substantially as shown and described.

6th, The arrangement of the spider, D D, with reference to the spring, C, substantially as shown.

7th, The combination of the overhanging valve, A, spring, C, spindle, E, and spider, D D, or its equivalent, substantially as shown and described.

83,321.—RAILWAY CAR BRAKE. Martin H. Rumpf, Paris, France. Patented in France Oct. 17, 1867.

I claim the combination with a brake suspended as described, of a sliding or rotating shaft, or a chain for raising and lowering the brake, either the shaft or chain being operated by any suitable mechanism, substantially as herein set forth and shown.

83,322.—MACHINE FOR SHARPENING THE CUTTERS OF MOWING MACHINES.—Gelston Sanford, Bergen Point, N. J.

I claim, 1st, The combination, with the holding bed, I, of a reciprocating grinder, arranged for adjustment relative to one another, substantially as and for the purpose set forth.

2d, The combination, with the holding bed, I, of the adjustable arms, L, substantially as and for the purpose described.

3d, The combination, with the bed, A, of the holding bed, I, and reciprocating stone, D, substantially as and for the purpose set forth.

4th, The bed, B provided with the ways, C, trough, B, and sponges, Q, substantially as and for the purpose set forth.

5th, The arrangement of the sliding stone, D, connecting rod, G, crank shaft, H, and stone, P, substantially as and for the purposes set forth.

6th, The combination, with the reciprocating stone, D, of the presser wheel, O, substantially as and for the purpose set forth.

83,323.—DINNER PAIL.—Moritz Saulson, Troy, N. Y.

I claim the combination of the pail, A, inner vessel, B, arranged in the upper part of the pail, pan, C, in the upper part of the inner vessel, and cover, D, extended down outside of the pan, inner vessel, and pail, as herein described

Also, the combination, with the pail, A, and inner vessel, B, of the removable wire spring, K, and groove or grooves, L, formed and arranged substantially as and for the purpose herein set forth.

Also, the combination, with the pail, A, and outside surrounding cover, D, of the recess, r r, and wire-like spring bail, N n, formed and arranged substantially as and for the purposes herein shown and described.

83,324.—SAWING MACHINE.—F. M. Schaeffer, Blooming Grove, Kansas.

I claim, 1st, The arrangement of the guides, M M, and springs, m m, with relation to the guides, G, and the saw, whereby said guides, M, move independently of each other, to press upon the log being sawed, as herein described, for the purpose specified.

2d, The guides of a reciprocating saw, supported on an adjustable oscillating plate or support, K, substantially as and for the purpose described.

3d, The combination, with the plate, K, and the saw guides, of the lazy tongs, I, for the purpose of connecting the guides to the oscillating plate, and admitting of the rising and falling motion required by the saw in its passage through the log, substantially as and for the purpose described.

4th, The swinging block support, Q, arranged as described, in combination with the log bed, substantially as and for the purpose described.

83,325.—WASHING MACHINE.—Jerome Scott, Charleston, Pa.

I claim the swinging bucket, D, as arranged and connected, by means of the arms K, with the press board, H, and operated by the levers, F, and handle, E, substantially in the manner and for the purposes herein shown and described.

83,326.—HORSE RAKE.—Nicholas Selby, Flora, Ill.

I claim, 1st, The arrangement of the hinged trail, e, c, carrying the revolving rake within the rectangular balanced frame, a a a a, all constructed and combined to operate substantially as and for the purposes herein shown and described.

2d, The notched trip stick, u r, when hinged to the front cross bar of the frame, a, and combined with a spring, w, whereby said stick, s, is actuated downward, and held in contact with the rake head, as herein shown and described.

3d, The described arrangement of the pivoted lever, k, link, l, and stirrup link, n, with relation to the rectangular balanced frame, a, and hinged rake frame, c, as herein shown for the purpose set forth.

83,327.—PIE TABLE.—Nancy M. Sheldon, Chatham, Conn.

I claim, as an article of manufacture, the cone-shaped tube, A, provided near its lower edge with a series of holes, a a, substantially as and for the purposes herein set forth.

83,328.—INKSTAND.—Wm. G Shattuck, Boston, Mass.

I claim the combination, with the ink well and its metallic case and cover, applied to a desk or like article, in the manner described, of a nut, E, arranged to hold said ink well and case in place, substantially as herein set forth.

83,329.—WASH BOILER. Allen Sherwood, Auburn, N. Y.

I claim, in a clothes washer, the wooden perforated float, B, provided with a metal flange, C, tubes, I I, and, at its center, with a circular hole, covered covered with wire gauze, over which hole is placed a tapering cylinder, D, provided at its upper end with a circular perforated box, E, all constructed and operating substantially as and for the purposes herein set forth.

83,330.—STOP MOTION FOR WARPING MACHINE.—J. Siegrist, New York city.

I claim, in combination with the weights, G, suspended on or from the yarns, the balanced frame, H I J and K, arranged for operation by said weights, revolving shaft or drum, L, provided with a lifter, f, and belt shifter for throwing the yarn beam out of gear, all for action together, substantially as specified.

83,331.—SPINDLE FOR SHUTTLES.—C. E. Smith (assignor to himself, J. S. Jaques, and F. T. Jaques), Lowell, Mass.

I claim a split shuttle spindle, notched or serrated on both sides, or on its entire circumference, substantially as and for the purposes set forth.

83,332.—DEVICE FOR FASTENING SHIRT COLLARS.—P. W. Smith, Chicopee Falls, Mass.

I claim the combination of the plate, A, necks, a and b, with oblong and circular flanges, B and C, and pin, D, the parts being constructed and arranged substantially in the manner and for the purposes set forth.

83,333.—SOFA BEDSTEAD.—B. L. Southwick, New York city.

I claim the seat, D, sliding in groove, a, of the arm rests, B, and hinged at its rear edge to the back, E, which back is held up to the arm rests, B, by the catches, e, and projections, f, all operating as described, whereby the back is turned down into a horizontal position and then drawn forward into the grooves, a, with the seat, D, until arrested by the projection, f, whereby a continuous bed bottom is formed, as herein shown and described.

83,334.—COMBINED SEEDER AND CULTIVATOR.—Lucus Stadler, Bowen, Ill.

I claim, 1st, The knives, G, constructed and operating substantially as and for the purposes set forth.

2d, Combining in one machine the knives, G, the seed-sowing box, D, the sod breakers, F, cultivator plows, K, and harrow, O, substantially as specified.

3d, A seed sowing cultivating, and harrowing machine, having seed box, D, cylinder, E, cranks, a a, pinion, b b, cranks, d, sod breakers, F, knives, G, roller, H, pins, n, plows, K, lever, S, and harrow, O, constructed and arranged substantially as specified.

83,335.—BEE HIVE.—Upton Stansbury, Plymouth, Ind.

I claim, 1st, The breeding boxes, C C, closed at their sides and ends, and slotted at the top and bottom, and provided with small glass windows and entrances, and connected to the cleats, c c, of box, A, by means of their grooved sides as herein set forth.

2d, The arrangement of the outside box, A, with the breeding boxes, C C, honey boxes, D D, and slide screens, a and n, substantially as and for the purposes herein set forth.

83,336.—BALANCE SLIDE VALVE.—William M. Stevenson, Sharon, Pa.

I claim a steam valve, constructed as described, with a cavity, d, between the walls, a a, and with packing strips, e e, in grooves on the top of the walls, a a, steam being admitted through holes, n n, under said strips, pressing them up against the cap of the steam chest, substantially as and for the purpose herein set forth.

83,337.—WEATHER-BOARD GAGES.—W. E. Stoddard, Fort Edward, N. Y.

I claim the combined weater-board gage and scribe, consisting of arms, A B, slide, E, the spur-pivoted block, H, hinged bar, I, sliding block, J, and slotted knife, K, all constructed and arranged to operate as herein shown and described.

83,338.—CORN PLANTER.—D. F. Taft, New Bedford, Mass

I claim, 1st, The rock shaft, J, levers, g l, and disk, e, in combination with the cords, b i, section, M, angular lever, H, and cam, L, attached by a rod to the disk, e, all operating as described whereby the partial rotation of the rock shaft throws the seeding device out of gear, and folds back the discharge spout simultaneously, substantially as herein shown and described.

2d, The hinged section, M, of the jointed spout, in combination with the pin, l, notched bar, P, and spring, R, all made and operating so that the section will be yielding, even if in the working position, as set forth.

3d, The cam, D, levers, I H, and spring, K, all operating as set forth, so as to move the seed slide, F, back and forth, the cam being connected with a revolving ratchet wheel, a, by means of a pawl, b, so that it will be out of gear when the machine moves backward, as specified.

4th, The wedge, L, connected with a crank or disk on the rock shaft, J, substantially as described, and operating so as to throw the lever, I, off the cam D, when the machine is to cease dropping seed, as set forth.

83,339.—ATTACHMENT FOR SKATES.—F. T. Thurston, Providence, R. I.

I claim the shoe, A or B, with the protecting strip, a, constructed substantially in the manner described for the purpose specified, irrespective of the method employed to secure its attachment to the skate.

83,340.—SHIELD FOR CORN PLANTER.—R. T. Taylor, Everton, Ind.

I claim, 1st, The adjustable shield, B, constructed and attached to the plow in the manner described, and operated by means of the slotted arms on the stay, c, and the lever, D, substantially as and for the purposes herein set forth.

2d, The ratch bar, g, in combination with the bent spring, h, for the purpose of holding the lever, D, at any point desired, thereby adjusting the shield, B, substantially as and for the purposes herein set forth.

83,341.—POCKET DRINKING CUP.—J. S. Towndrow, Moline, Ill., assignor to W. P. Humphrey, Davenport, Iowa.

I claim a pocket goblet, consisting of the cup, A, and stand, B, constructed so that they may be detached, and the cup connected to the stand in a reversed position, substantially as herein described.

83,342.—HORSESHOE MACHINE.—Enoch B. Turner, Providence, R. I.

I claim, 1st, The arrangement and combination of the adjustable gage, L, knife holder, M, adjustable knives, T and S, adjustable butting gage, N, spring, t, and slotted bar, K, as herein set forth and for the purposes described.

2d, The combination of the anvil, F, mandrels, I I, pads, J J, squeezing cam levers, E E, forks, k k, and springs, j j, all arranged as herein set forth and for the purposes described.

3d, The combination of the above devices with the cranks, b b, adjustable shafts, B B, saddles A A, saddle bars, A' A', spurs, m m m m, axle g g, adjustable connecting rods, P P, rollers, D D, slotted cam formers, G G, former rollers, H H, and adjustable rollers, i i, as herein set forth, all arranged and combined so as to form a complete machine for making horseshoes, as described.

83,343.—SPRING ADJUSTER.—J. D Van Hoevenbergh, Kingston, N. Y.

I claim the improved spring adjuster above described, its several parts being arranged and operating together, substantially as herein specified.

83,344.—GAS MACHINE.—Hugh Wain, Ravenna, Ohio.

I claim the arrangement of the cylinder, A, tank, C, provided with induction and exhaust pipes, and having the space, H, filled with a poor conducting material, in combination with the perforated bottom and gasometer, D, as and for the purpose substantially as described

83,345.—BINDING MATHEMATICAL BOOKS.—F. B. Wells, Fishkill on the Hudson, N. Y.

I claim the insertion of these silicated leaves in the aforementioned works in which they may be used, said leaves to be bound in the book firmly, inserting any number desired, according to the nature and the size of the volume, or they may be simply fastened in any way, that they may be removed, changed, or replaced, or new ones inserted, at pleasure, if so thought to be more practicable.

83,346.—JET ATTACHMENT FOR SODA FOUNTAINS.—J. C. Wharton, Nashville, Tenn.

I claim an attachment for soda-water fountains, when constructed of a plane surface, A, having a border pipe, B, provided with jet tubes, a a a, e e, drain pipe, b, and supply pipe, d, all substantially as and for the purpose set forth.

83,347.—MACHINE FOR BENDING SHEET METAL.—A. W. Whitney and P. A. Whitney, Woodstock, Vt

I claim, 1st, The folding bar, H, in combination with the bars, J J, arms, P P, and connecting rods, Q, all arranged to operate in the manner substantially as and for the purpose set forth.

2d, The straps, M, in combination with the folding bar, H, adjustable bearings, I, and screws, O, all arranged to operate in the manner substantially as shown and described.

3d, Holding the folding blade, C, upon the work or bed piece, B, through the media of the cams, l, friction rollers, L, and bars, D e, all arranged to operate substantially as set forth.

4th, The gage, E, arranged and applied in connection with the screw, F, substantially in the manner as and for the purpose set forth.

83,348.—COUNTER SINK.—P. A. Whitney, Woodstock, Vt. Antedated Oct. 16 1868.

I claim the herein-described improved counter sink, when constructed substantially as and for the purpose described.

83,349.—LATHE CHUCK.—D. E. Whiton, West Stafford, Conn.

I claim the construction and arrangement of the back plate, P, with openings, b b b, and projection, E, with sockets, a a a, when connected with the rack, B, of a geared chuck, substantially as and for the purpose herein shown.

83,350.—EXTENSION TABLE.—F. R. Wolfinger and Joseph Barrett, Chicago, Ill.

We claim an extension table consisting of a central frame, A, having the side rails cut away to form recesses, F, to receive the attachable top boards G, and having the extension frames connected thereto by the hinged bars, H, all constructed and arranged to operate as set forth.

83,351.—STEAM HEATING.—George M. Woodward, New York city.

I claim the cap, C, secured upon the pipe, B and provided with a perforated diaphragm, b, from which the tube, D, is suspended, substantially as herein shown and described.

83,352.—HYDROCARBON BURNER.—H. W. Yerington, Jersey City, N. J

I claim, 1st, The combination, with the oil tank, A of the air jacket, B, having inlet and outlets, d and c, for operation in connection with the burners of a liquid fuel apparatus, substantially as specified.

2d, The combination of the oil tank, A, air jacket, B, suction pipe, C, and steam jet pipe or nozzle, g, essentially as herein set forth

3d, The combination of the pipe or pipes, I, mixing and distributing boxes, F, air pipes, C and G, and burners, E, for operation together, as specified.

4th, The intermediate connecting pipe, J, in combination with the gas pipes I, and air pipe, C, substantially as shown and described.

5th, The tubular burners, E E, arranged essentially as specified, and provided with oblique jet orifices or slots, e, as herein set forth.

83,353.—ATTACHMENT TO SPOOLS FOR CUTTING THREAD.—J. W. Murrell, Seaford, Del., assignor to himself, Samuel Perry, and E. R. Jacobs.

I claim, as an article of manufacture, the within described thread breaker, formed from sheet metal, its retaining parts, a a, being cut from its center, and bent at right angles thereto, substantially as and for the purposes herein set forth.

83,354.—BOBBIN AND THREAD-HOLDER FOR SPINNING MACHINES.—T. L. Luders, Olney, Ill.

I claim the coiled wire holder, A, having outwardly curved arms, a a, constructed as described, combined with the spindle and the bobbin, and serving as a holder for the bobbin and for the thread, as set forth.

REISSUES.

53,291.—CAR COUPLING.—J. J. Gest, Cincinnati, Ohio Dated March 20, 1866; reissue 3, 161.

I claim, in combination with arched or elliptic springs, having reversed curves at or near their ends, a correspondingly curved or inclined block abutment or bearing, so that, as the spring settles or yields under its load it will practically become shorter and stronger, but still retain its elastic quality, and be firmly held in place and to the block or bearing, substantially as herein described and represented.

74,919.—WASHING MACHINE.—Alford Lamb, Mary E. Lyman, and W. H. Morse, Jeffersonville, N. Y, assignees of Alford Lamb. Dated Feb. 25 1868; reissue 3,162.

1 claim, 1st, The combination of the base, B, supported by springs, and a strip or strips of rubber, C, arranged as described

2d, The combination of the above with the fluted roller, D, substantially as described.

15 334.—HARVESTER CUTTER.—J. G. Perry, Kingston, R. I., assignee, by mesne assignments, of C. W. Glover, Roxbury, Conn. Dated July 15. 1856; reissue 3,163.

I claim, 1st. The combination, with the guard fingers, of the oscillating or rocking ledger blades or cutters, constructed with recesses in their upper sides, substantially as and for the purpose specified.

2d, So arranging the ledger blades or cutters, constructed as described, within the guard fingers, that they may have a rocking or oscillating movement during the reciprocating movement of the sickle, substantially as herein set forth.

3d, The attachment of the ledger blades to the guard fingers by means of the trunnions, e, on the blades extending into the cavities, f, in the fingers, substantially as and for the purpose specified.

21,034.—SEED PLANTER.—J. H. Thomas & P. P. Mast, Springfield, Ohio. Dated July 27, 1858; reissue 3,164.

We claim, 1st, The arms, G3, mounted upon the shaft, G2, within the hopper G, substantially as and for the purpose described.

2, The slide, G1, having the openings, b, with the blocks or stops, c, fitting therein, and arranged to operate as described.

3d, The combination of the slide, G1, and blocks or stops, c, with the revolving arms, G3, all arranged to operate as herein set forth.

75,910.—RING FOR RING AND TRAVELER SPINNING MACHINE.—J. W. Watres, Canton, Mass. Dated March 17, 1868; reissue 3,165.

I claim the ring receiver, constructed substantially as described, that is to say, not only with a shank to fit the rail socket, and with a bore eccentric with the cylindrical outer surface of such shank, as described, but also so as to be capable of being sprung or contracted upon the shank of the ring, by the screw inserted in the rail, and employed to confine the receiver in the socket of the rail, as set forth.

Also, the combination and arrangement of the single screw with the ring rail, an with the clamping receiver and ring, constructed as hereinbefore described, the whole being for the purpose set forth.

74,871.—COSMETIC.—J. M. Wilson, Seguin, Texas. Dated Feb. 25, 1868; reissue 3,166.

I claim, 1st, The chlorinated alkalies, or the alkaline chlorides, used as a cosmetical agent, in manner and for the purposes substantially as set forth.

2d, The chlorinated alkalies, or the alkaline chlorides, in combination with any acidulous wash.

3d, The chlorinated alkalies, or alkaline chlorides, in combination with an acidulous wash made from either oxalic, tartaric, or citric acid, either separate or combined, substantially as described.

74,169.—BALLASTING VESSELS.—J. B. Stoner, Leopold Mendelson, and Theodore Crommelin, New York city, assignees of J. B. Stoner. Dated Feb. 4, 1868; reissue 3,167.

We claim, 1st, A ballasting weight, L, applied on the free end of a swinging arm in combination with a recess made in the hull of a vessel, to receive said weight and arm, and a tube, P, substantially as described.

2d, The use of one or more weights, secured to stiff rods, and applied to a vessel in such manner that they can be lowered considerably below a vessel's keel, or raised and secured within recesses formed in the bottom of a vessel, substantially as described.

3d, A temporary ballast, consisting of a weight secured to the lower ends of one or more rods, and adapted to fit into a socket formed in the vessel, and operated from the deck, said rods being suitably inclosed within a tube rising from said sockets, substantially as specified.

DESIGN.

3,212.—CLOCK CASE.—Karl Muller (assignor to Nicholas Muller), New York city.

Inventions Patented in England by Americans.

[Compiled from the "Journal of the Commissioners of Patents."]

PROVISIONAL PROTECTION FOR SIX MONTHS.

2,680.—APPARATUS FOR EFFECTING AERIAL PROPULSION.—John Hunter, Morristown, N. J. Aug. 26, 1868.

2,692.—PROJECTILES FOR ORDNANCE AND FIRE-ARMS.—W. H. Shock, Washington, D. C. Aug. 31, 1868.

2,694.—CUTTING NIPPERS.—Nathan Thompson, Brooklyn, N. Y. Aug. 31, 1868.

2,704.—LOOM.—George Crompton, Worcester, Mass. Sept. 1, 1868.

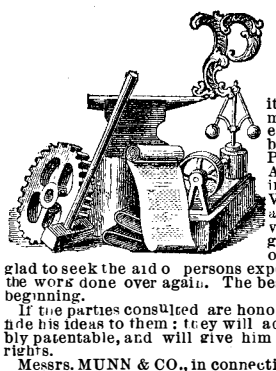
2,758.—ROTARY ENGINE.—George Whitcher, Brooklyn, N. Y. Sept. 7, 1868.

2,774.—STEAM BOILER.—Joseph Nason, New York city. Sept. 9, 1868.

2,780.—PUMP.—James Wilson, Bridgeport, Conn., and Chas. F. Mudge, Lynn, Mass. Sept. 9, 1868.

2,818.—SUBSTITUTE FOR HAIR STUFFING, FROM VEGETABLE FIBERS.—Nathan W. Blanchard, Dutch Flat, Cal. Sept. 14, 1868.

PATENTS.



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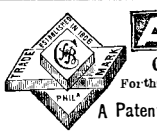

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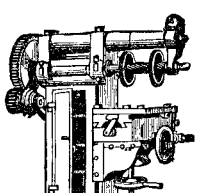

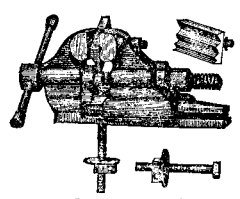

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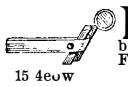

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U. S. PATENT OFFICE.
WASHINGTON, D. C. Oct. 16, 1868.
Jotham S. Conant, Hackensack, N. J., having petitioned for an extension of the patent granted him on the 16th day of January, 1855, for an improvement in "Sewing Machines" it is ordered that the said petition be heard at this office on the 28th day of December next.
Any person may oppose this extension. Objections, depositions, and other papers should be filed in this office twenty days before the day of hearing.
19 3 ELISHA FOOTE, Commissioner of Patents.

U. S. PATENT OFFICE.
Washington, D. C., Oct. 22d, 1868.
Thaddeus Selleck, of Greenwich, Conn., having petitioned for the extension of the patent granted him on the 30th day of January, 1855, for an improvement in "Method of Working Franklinite Ore," it is ordered that said petition be heard at this office on the 11th day of January, next
Any person may oppose this extension. Objections, depositions, and other papers, should be filed in this office twenty days before the day of hearing.
ELISHA FOOTE, Commissioner of Patents.

U. S. PATENT OFFICE.
WASHINGTON, D. C., Oct. 21, 1868.
Geoge A. Brown, of Middletown, R. I., having petitioned for an extension of the patent granted him on the 23d day of January, 1855, for an improvement in "Hay Making Machine," it is ordered that the said petition be heard at this office on the 4th day of January next.
Any person may oppose this extension. Objections, depositions, and other papers should be filed in this office twenty days before the day of hearing.
ELISHA FOOTE, Commissioner of Patents.

U. S. PATENT OFFICE.
Washington, D. C., Oct., 19, 1868.
Charles Mettam, of New York city, having petitioned for an extension of a patent granted him on the 31 day of January, 1855, for an improvement in "Rolling Iron Shutters," it is ordered that said petition be heard at this office on the 4th day of January next.
Any person may oppose this extension. Objections, depositions, and other papers, should be filed in this office twenty days before the day of hearing.
ELISHA FOOTE, Commissioner of Patents.

U. S. PATENT OFFICE,
WASHINGTON, D. C., Oct. 15, 1868.
Russell Jennings, of Deep River, Conn., having petitioned for an extension of the patent granted him on the 30th day of January, 1855, reissued on the 3d day of Oct., 1865, and again reissued on the 16th day of January 1866, for an improvement in "Augers," it is ordered that said petition be heard at this office on the 11th day of January next.
Any person may oppose this extension. Objections, depositions, and other papers, should be filed in this office twenty days before the day of hearing.
ELISHA FOOTE, Commissioner of Patents.

U. S. PATENT OFFICE.
Washington, D. C., Oct. 7 1868.
Fanny Holmes, of Whitehall, N. Y., executrix of the estate of John E. Newcomb, deceased, having petitioned for the extension of a patent granted the said John E. Newcomb on the 9th day of January, 1855, for an improvement in "Grain Harvesters," it is ordered that said petition be heard at this office on the 14th day of December next.
Any person may oppose this extension. Objections, depositions, and other papers, should be filed in this office twenty days before the day of hearing.
18 3 S. H. HODGES, Acting Commissioner of Patents.

U. S. PATENT OFFICE,
Washington, D. C., Oct. 3, 1868.
Lysander Wright, of Newark, N. J., having petitioned for the extension of a patent granted him on the 2d day of January, 1855, for an improvement in "Sawing Machine" it is ordered that said petition be heard at this office on the 14th day of December next.
Any person may oppose this extension. Objections, depositions, and other papers should be filed in this office twenty days before the day of hearing.
17 3 S. H. HODGES, Acting Commissioner of Patents.

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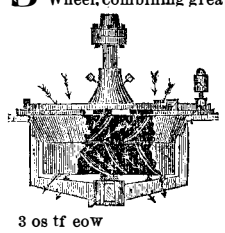

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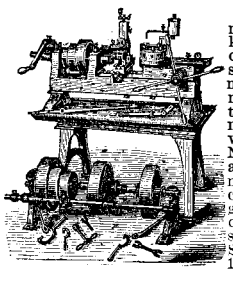

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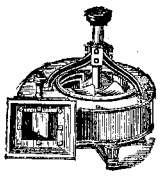

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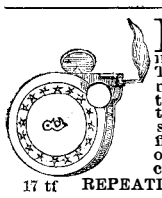

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